



# Weeks 2-3 Global Tropics Hazards Outlook

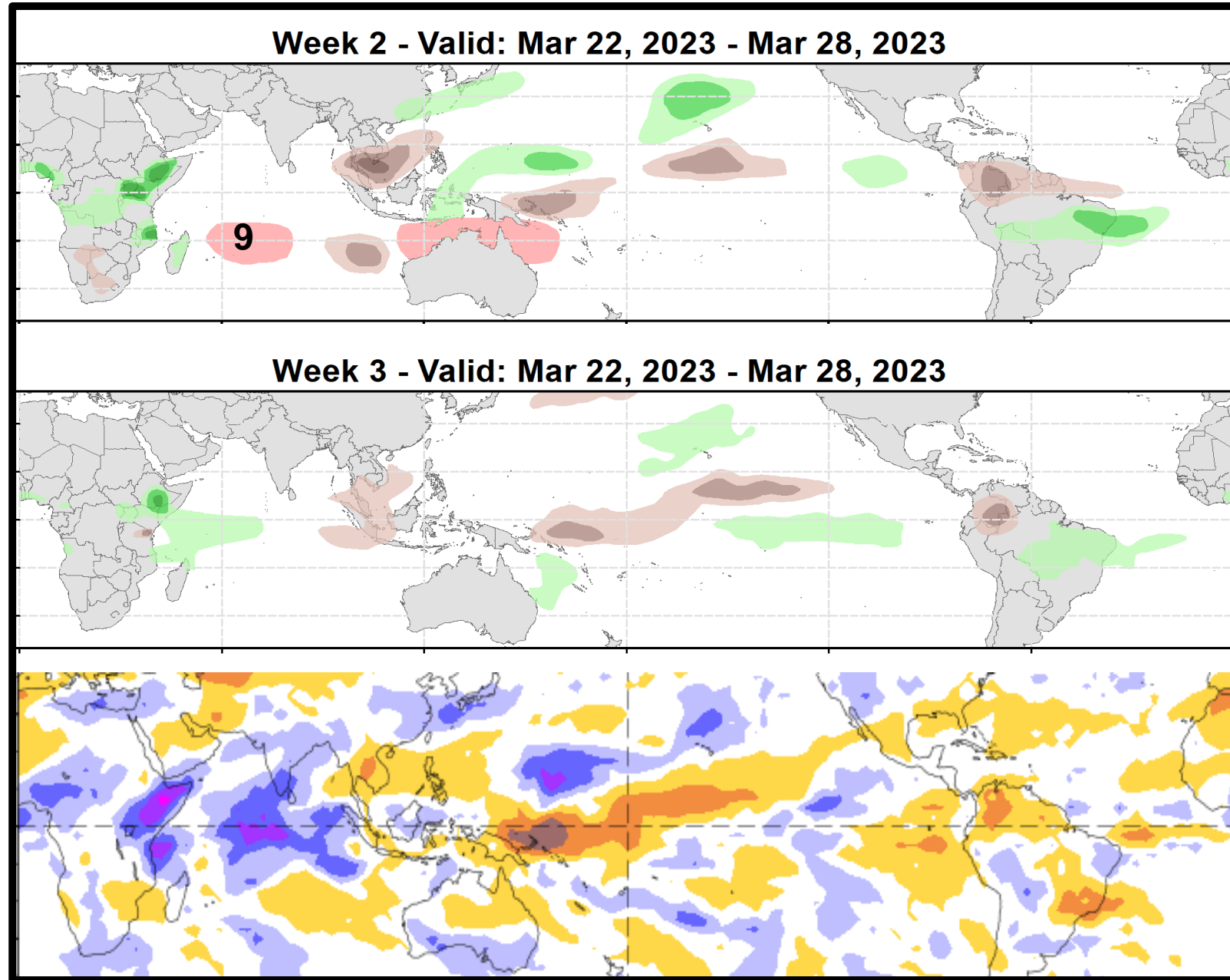
3/28/2023

Thomas Collow

NWS / NCEP / Climate Prediction Center

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

- Global tropics remain generally quiet.
- Tropical Depression 9 formed over the Southern Indian Ocean on 3/25, but it was weak and short-lived.



# Synopsis of Climate Modes:

---

**ENSO:** (Mar 9, 2023 Update)      *next update on Thursday, Apr 13<sup>th</sup>*

- ENSO Alert System Status: [Final La Niña Advisory](#)
- La Niña has ended and ENSO-neutral conditions are expected to continue through the Northern Hemisphere spring and early summer 2023.

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

- Following a very strong MJO signal across the Western Hemisphere earlier in March, the intraseasonal signal has since weakened as it moved into the Indian Ocean.
- Dynamical models are in good agreement regarding renewed MJO propagation across the Maritime Continent and Western Pacific during the next 2 weeks.
- An uptick in tropical cyclone activity is increasingly likely near the northwestern Australia coast and Timor Sea, consistent with the MJO and climatology.
- A strengthening MJO over the Maritime Continent and Western Pacific could lead to an extratropical response typical of La Niña, possibly leading to above (below) normal temperatures over the eastern (western) contiguous U.S. during April.

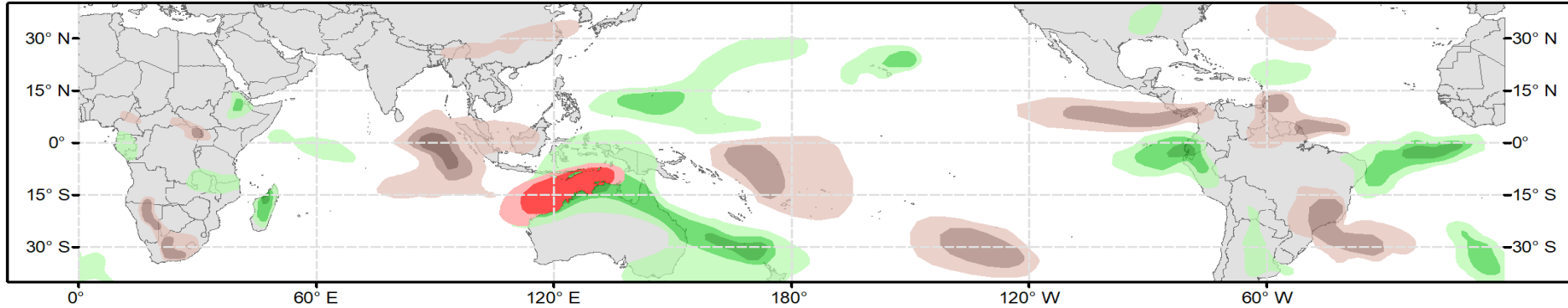
# GTH Outlook:



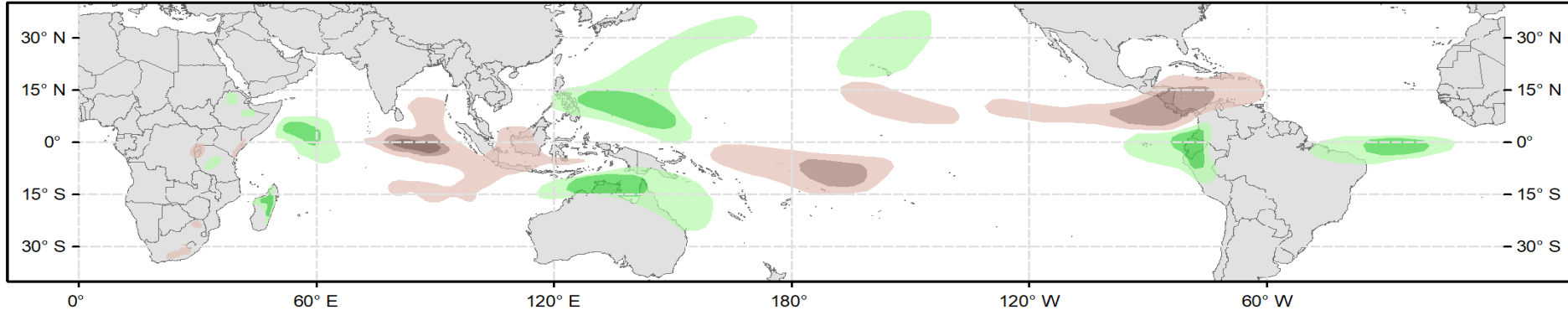
## Global Tropics Hazards Outlook Climate Prediction Center



**Week 2 - Valid: Apr 05, 2023 - Apr 11, 2023**



**Week 3 - Valid: Apr 12, 2023 - Apr 18, 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*

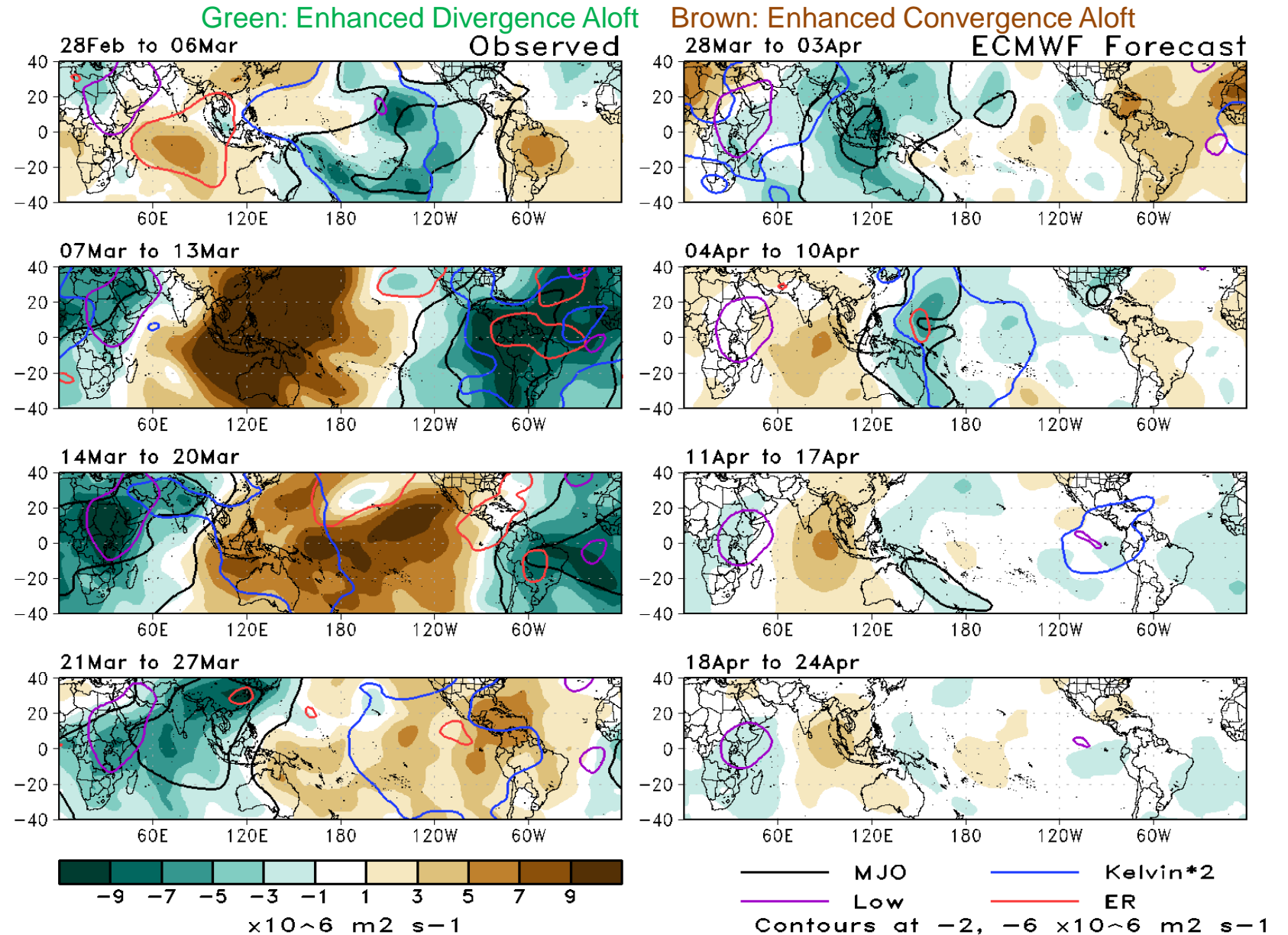
**Below-Average Temperatures Probability**  
  
 >50% >65% >80%  
*7-day min temperatures in the Lower third of the historical range*

**Issued: 03/28/2023**  
**Forecaster: Collow**

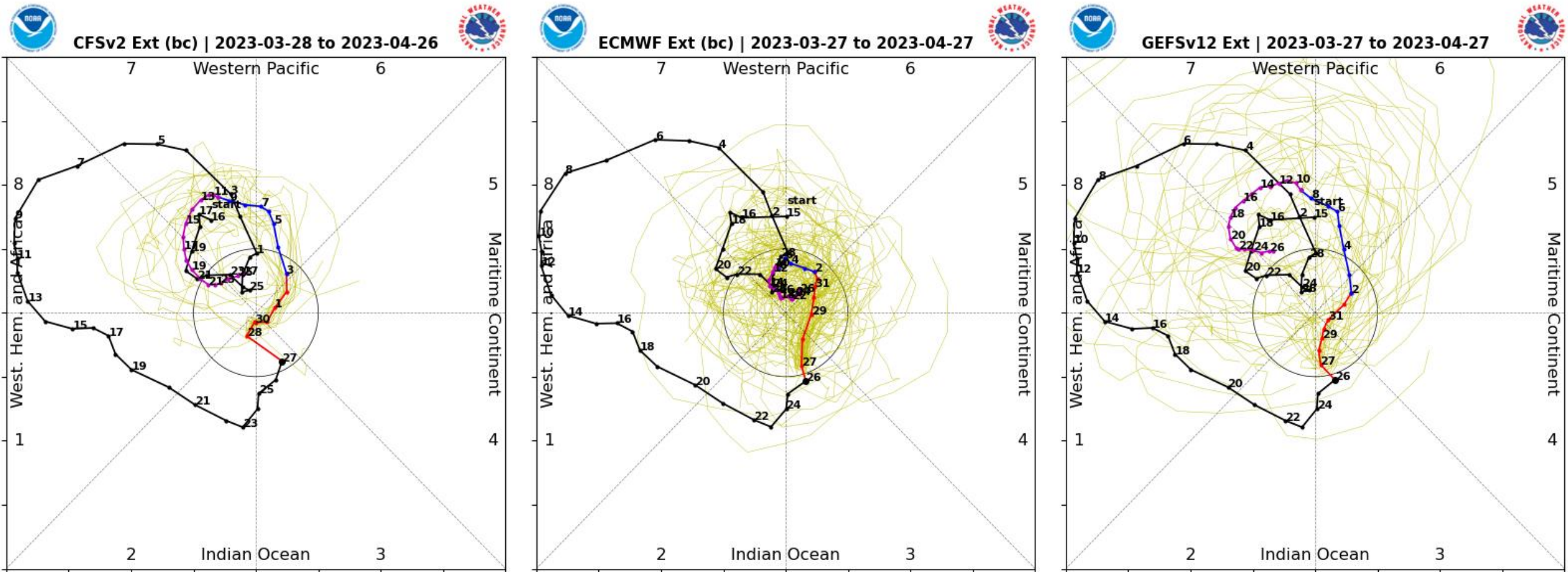
**This product is updated once per week and targets broad scale conditions integrated over a 7-day period for US interests only. Consult your local responsible forecast agency.**

# 200-hPa Velocity Potential Anomaly Maps:

- Robust wave-1 asymmetry pattern is evident in the upper-level velocity potential field during the month of March.
- Enhanced divergence aloft moved across the Americas and the Atlantic, and has returned to the Indian Ocean in the past week.
- Enhanced convergence aloft associated with the suppressed MJO phase propagated across the Pacific.

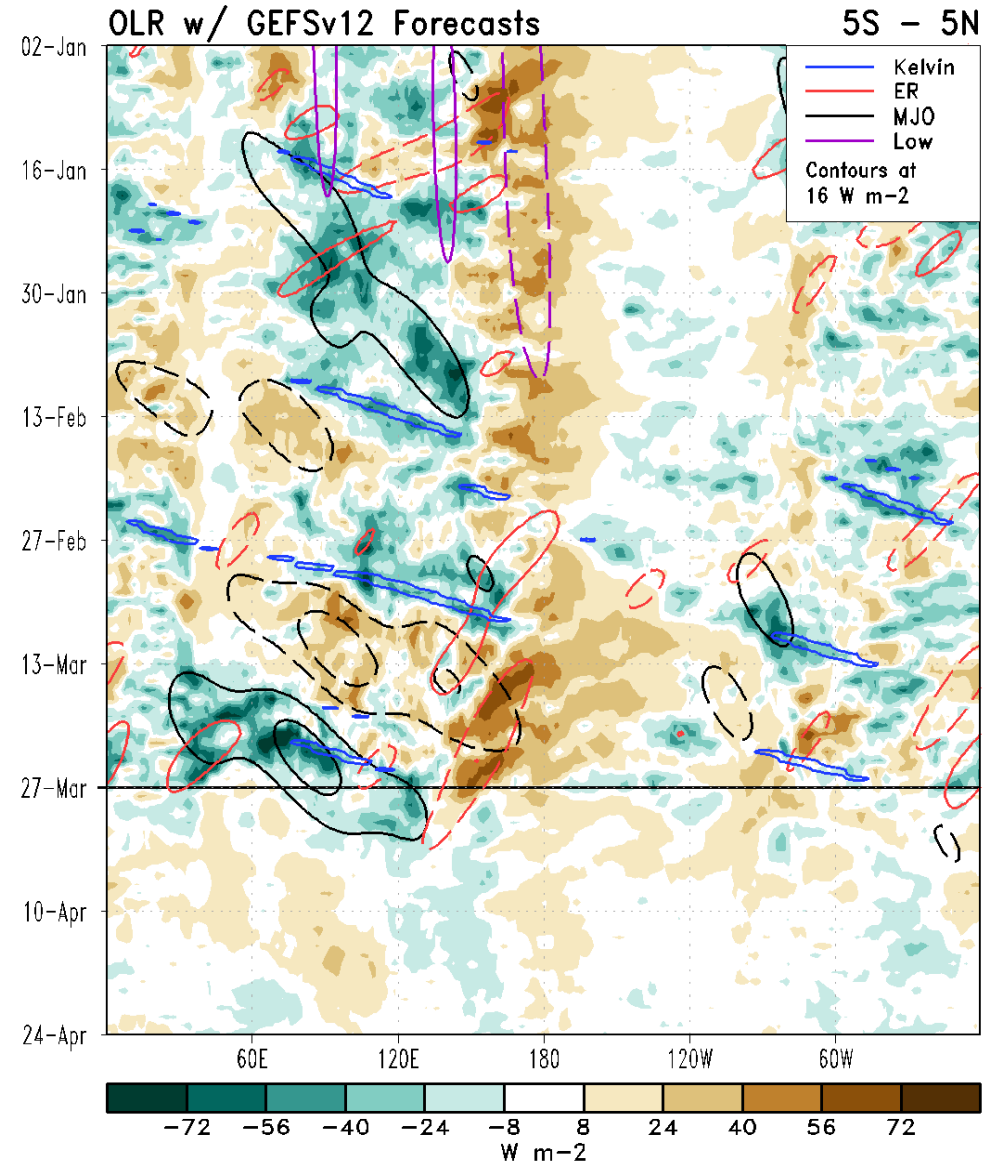
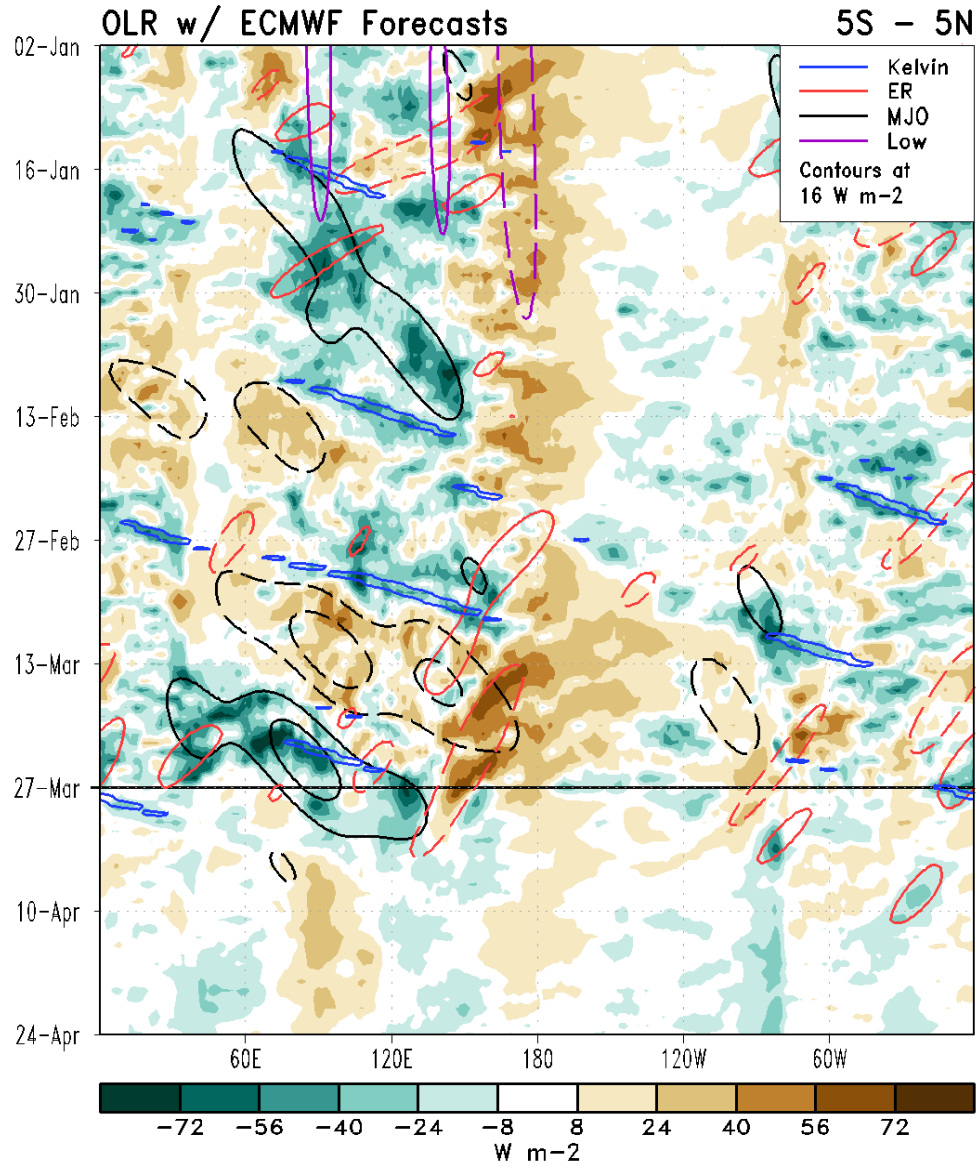


# RMM Index Observations & Forecasts:



- The CFS, GEFS and ECMWF dynamical model ensembles are in good agreement regarding a short-term weakening of the RMM-based MJO signal back into the unit circle followed by renewed strengthening of the signal across the Maritime Continent and Western Pacific in early April.

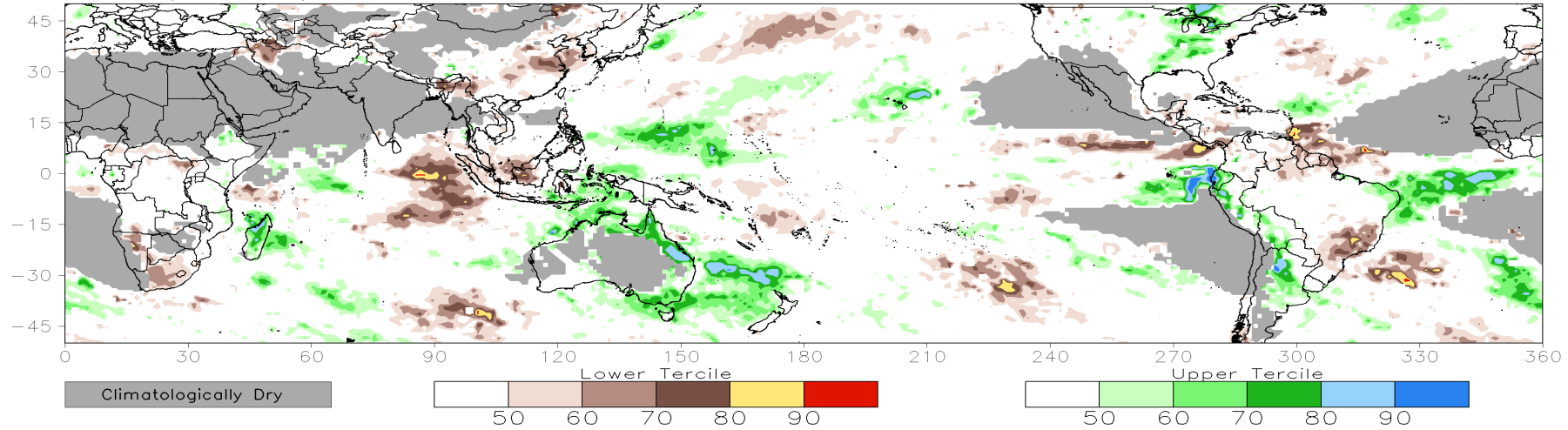
# Outgoing Longwave Radiation (OLR) Anomaly Time/Lon Plots:



# Consolidated Probabilistic Precipitation: Weeks 2 & 3

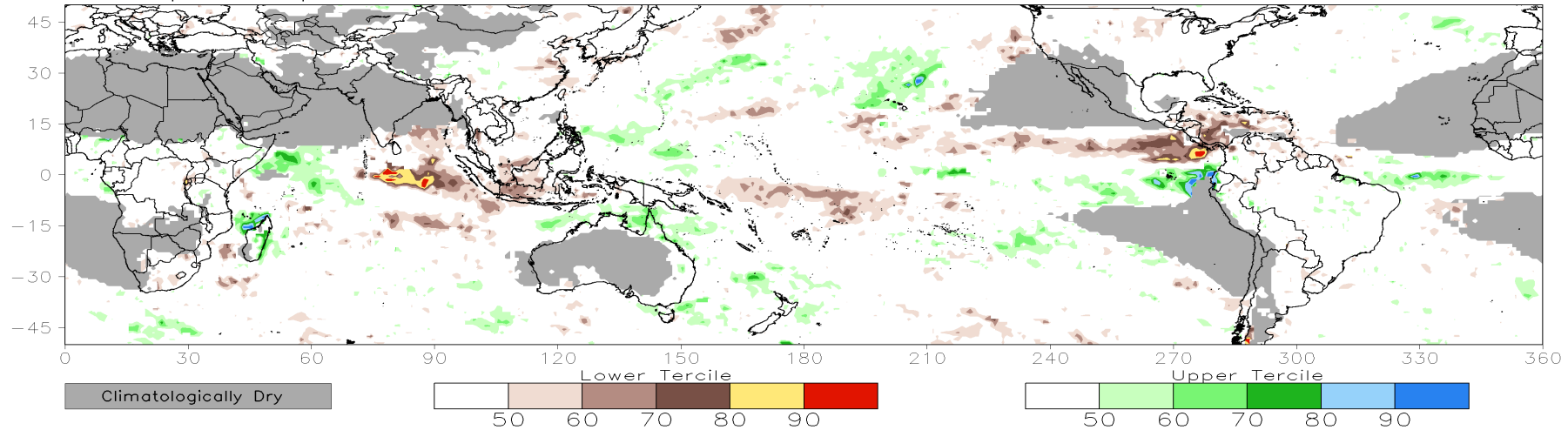
CONS 00z: Week2 Probability for Total Rainfall Below(Above) Lower(Upper) Tercile (%)

Valid: 05Apr2023–11Apr2023



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

Valid: 12Apr2023–18Apr2023

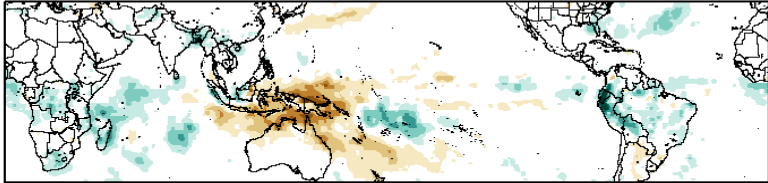




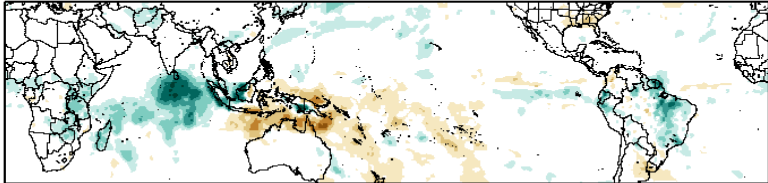
# Historical Precipitation Anomalies By MJO Phase:

FMA MJO Composite: GPCP1DD (mm/day)

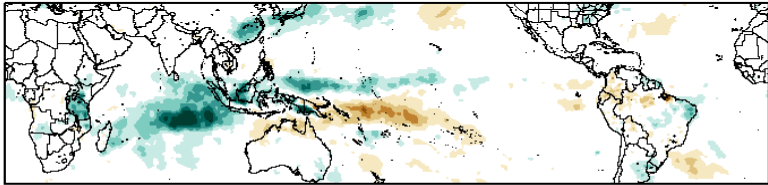
Phase 1



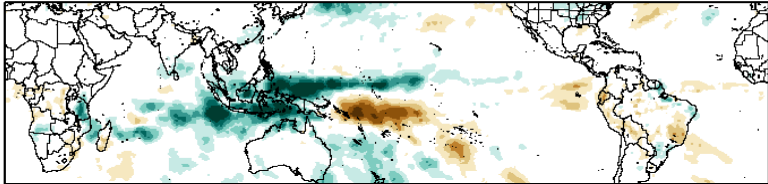
Phase 2



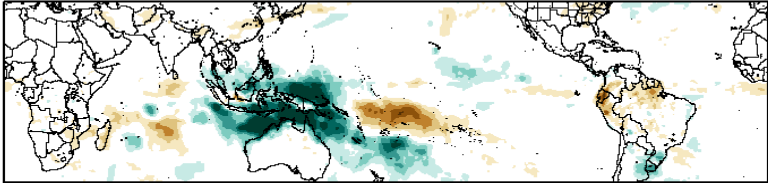
Phase 3



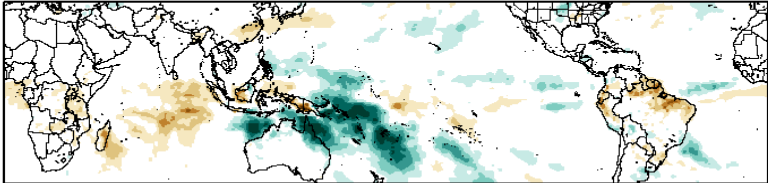
Phase 4



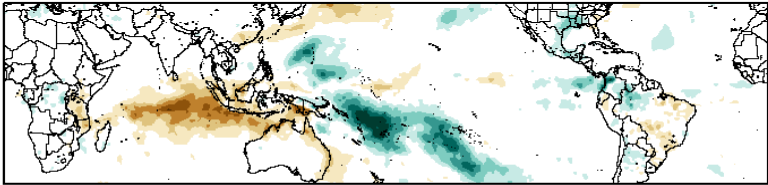
Phase 5



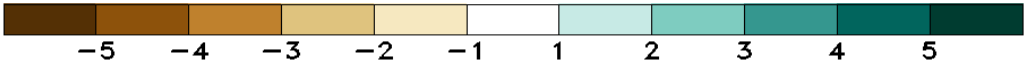
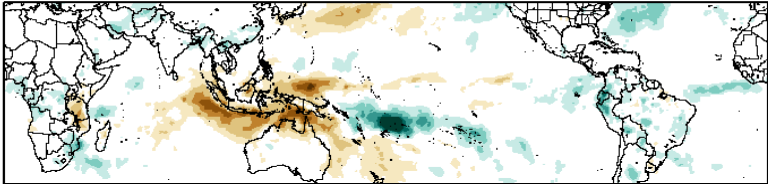
Phase 6



Phase 7

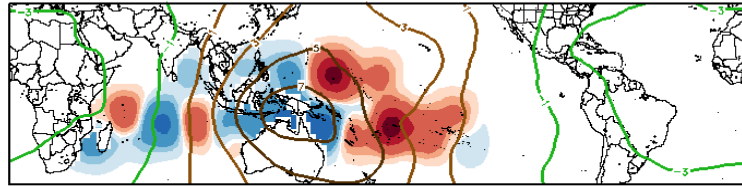


Phase 8

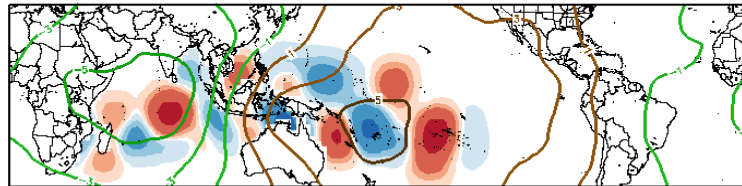


# Historical TC Origin Anomalies By MJO Phase & Weeks 2+3 Genesis Climo:

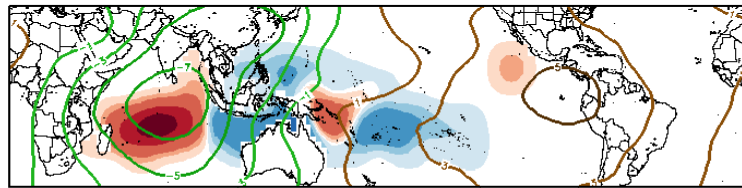
FMA MJO Composite: Mean TC Origin Density Anomaly ( $\#TCs/277km^2*100$ )  
w/ FMA CH1200 ( $\times 10^6 m^{-2} s^{-1}$ ) / Contours every  $2 \times 10^6 m^{-2} s^{-1}$



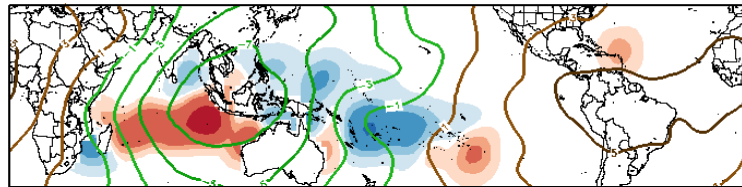
Phase 1



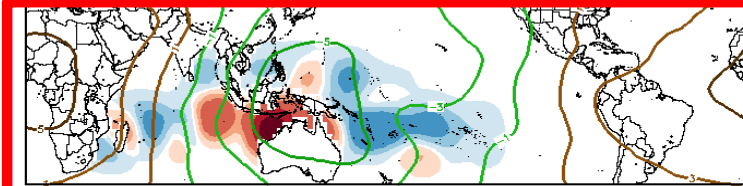
Phase 2



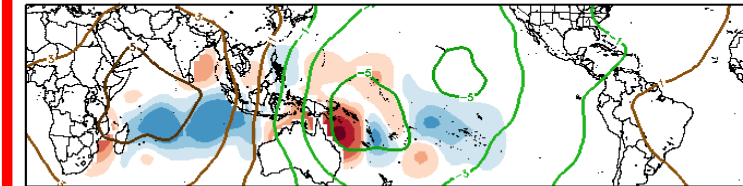
Phase 3



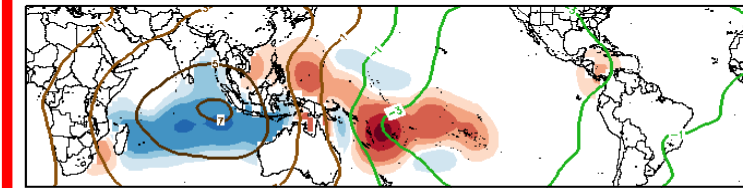
Phase 4



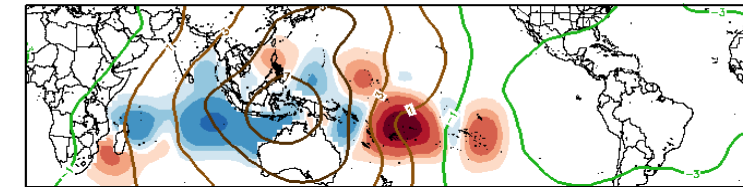
Phase 5



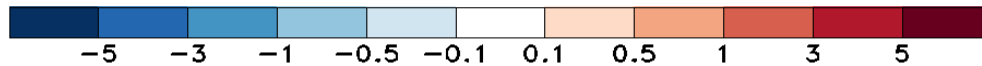
Phase 6



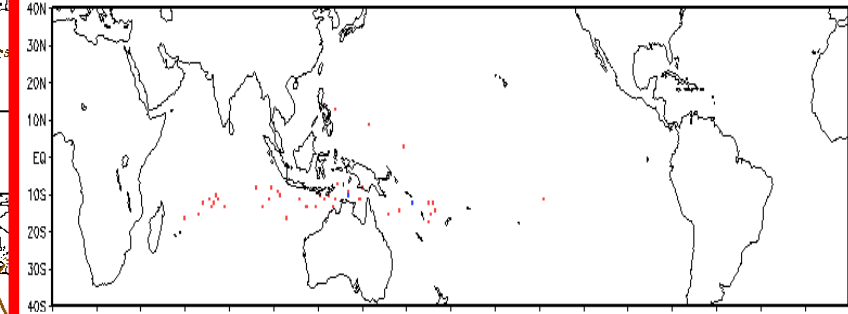
Phase 7



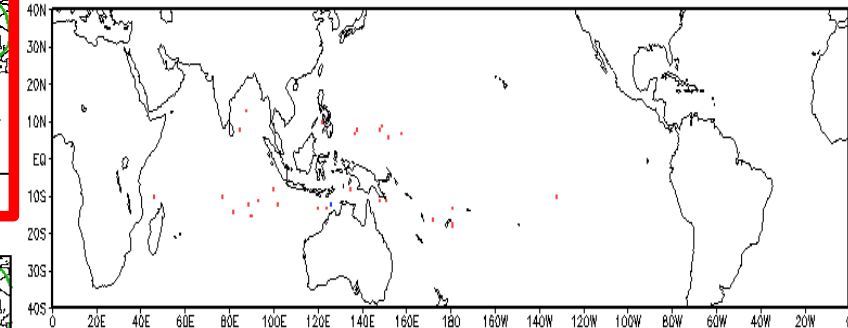
Phase 8



Observed TC Genesis, 1979-2021  
7-day Period 0405 to 0411



Observed TC Genesis, 1979-2021  
7-day Period 0412 to 0418

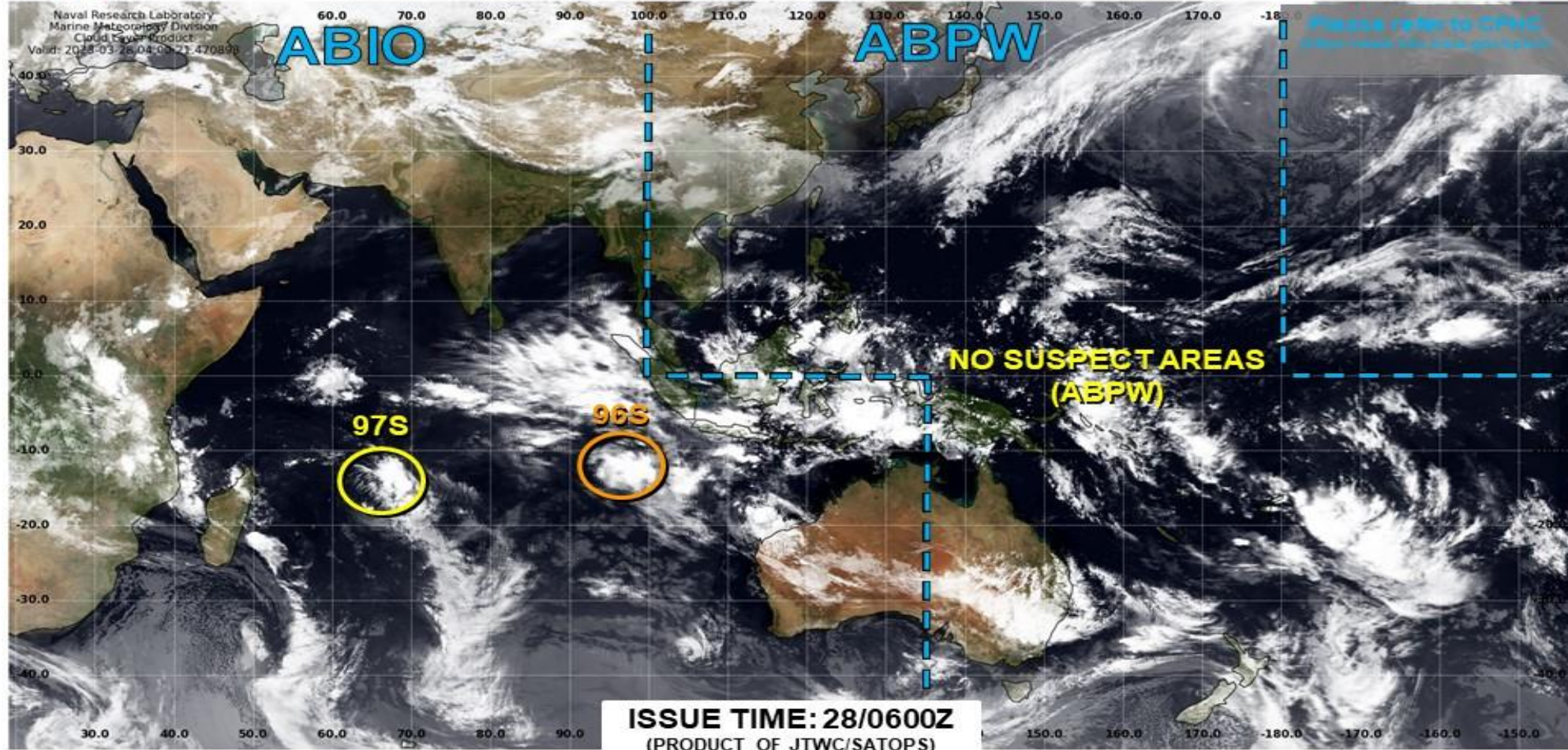


\*Experimental\*

# 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 TCDA)

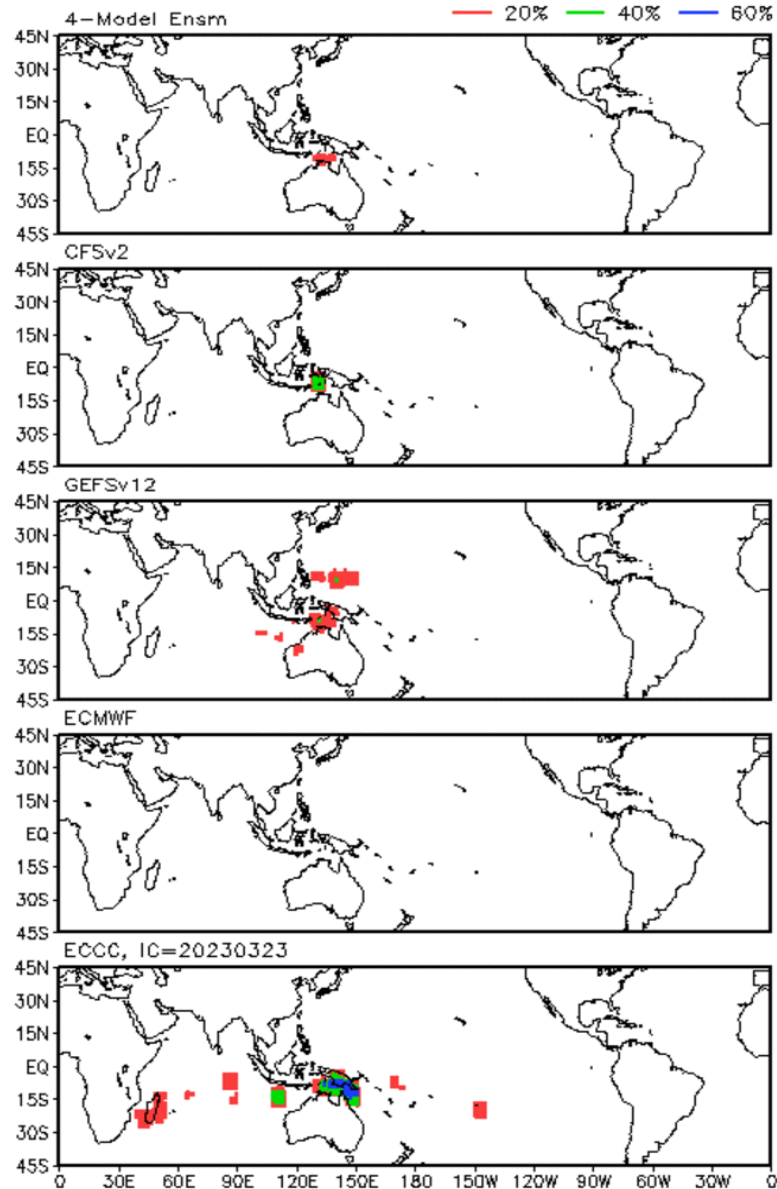


Monitoring for potential transition to TC. Invest label color denotes tropical transition probability

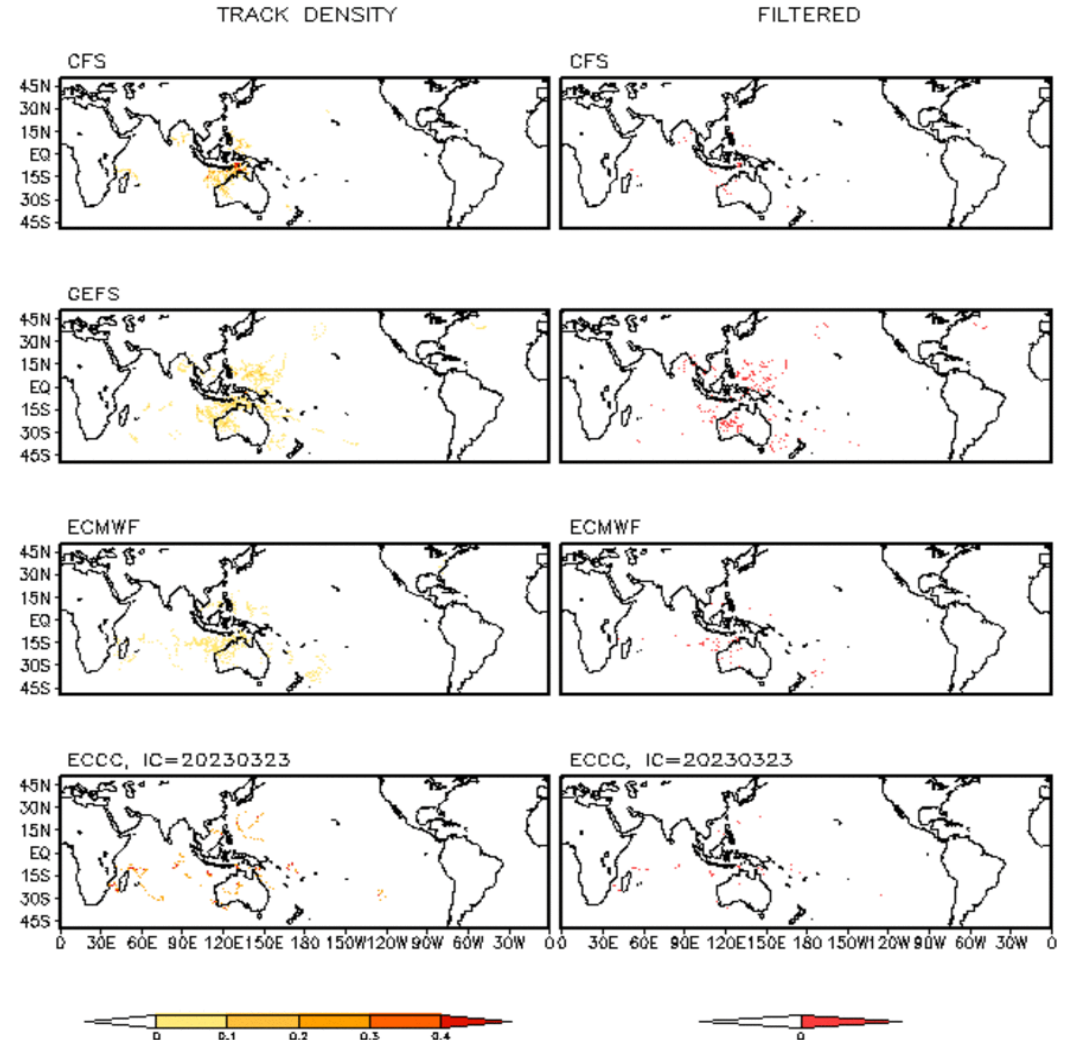


# Multi-Model TC Track Probabilities/Densities: Week-2

Storm Track Probabilities, IC=20230327  
Week 2: 0405 - 0411

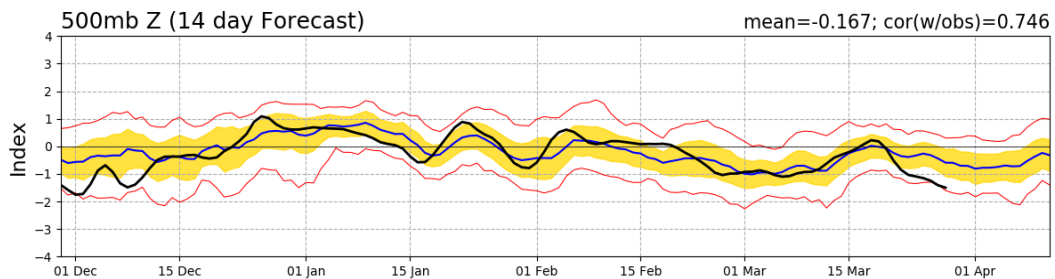
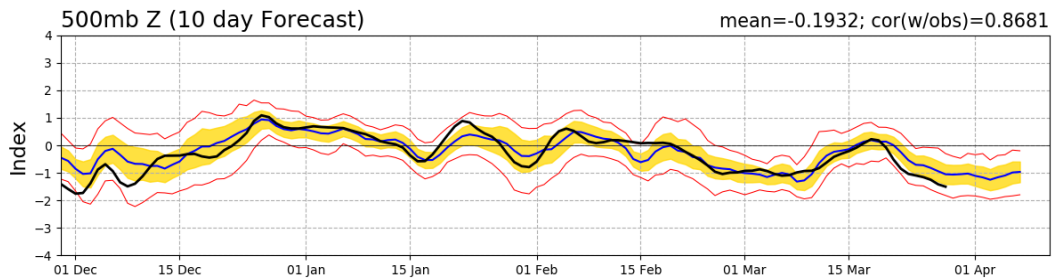
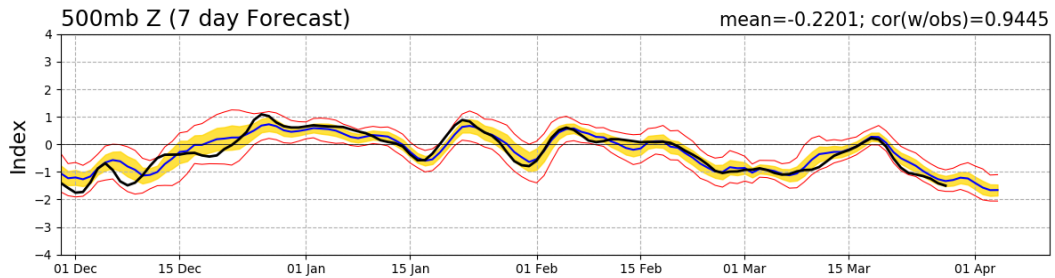
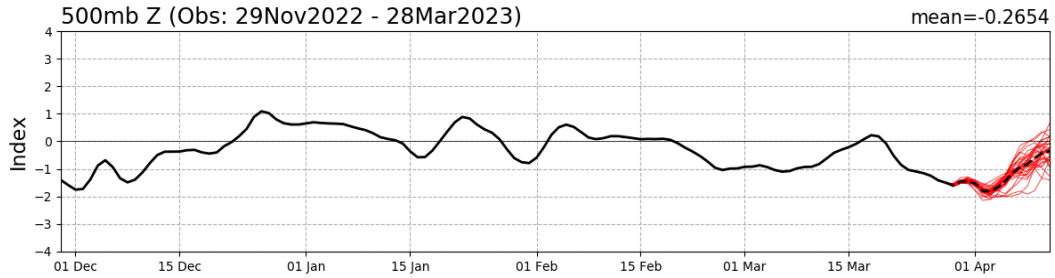


Storm Track Density Distribution, IC=20230327  
Week 2 Forecast: 0405-0411

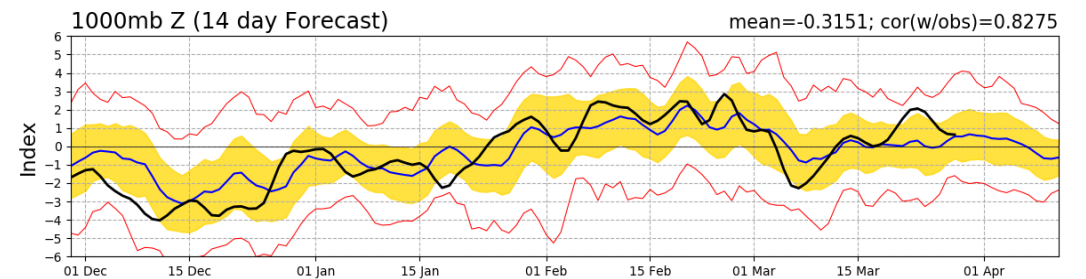
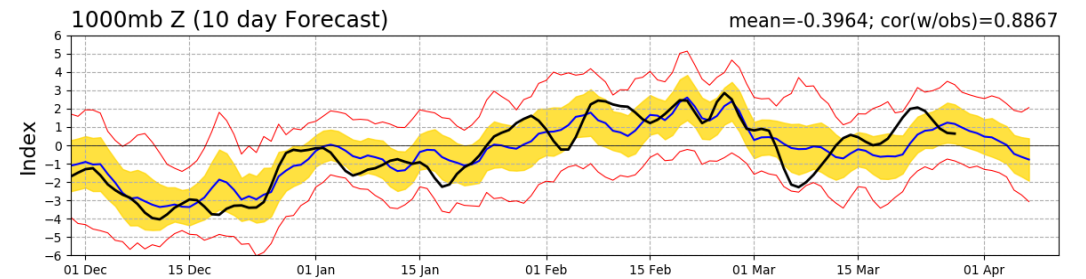
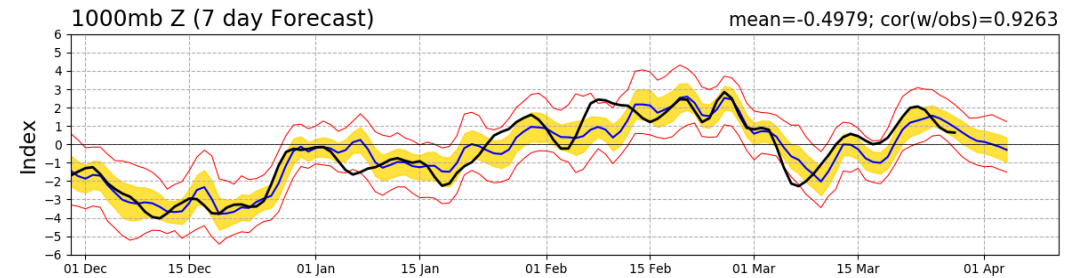
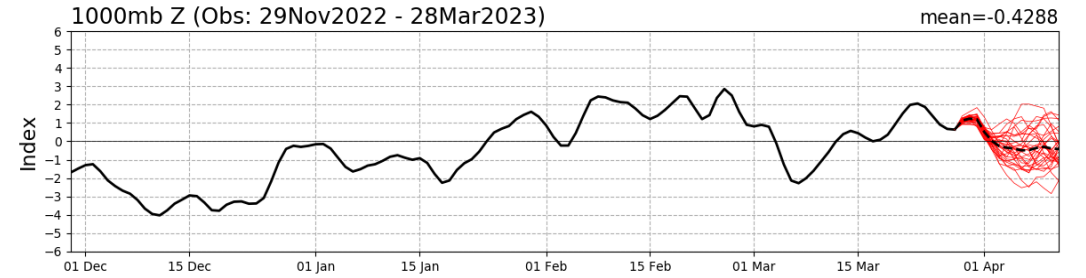


# Teleconnection Indices: PNA / AO:

## PNA Index: Observed & GEFS Forecasts

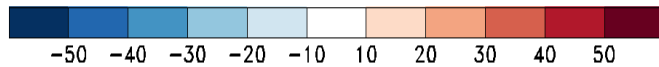
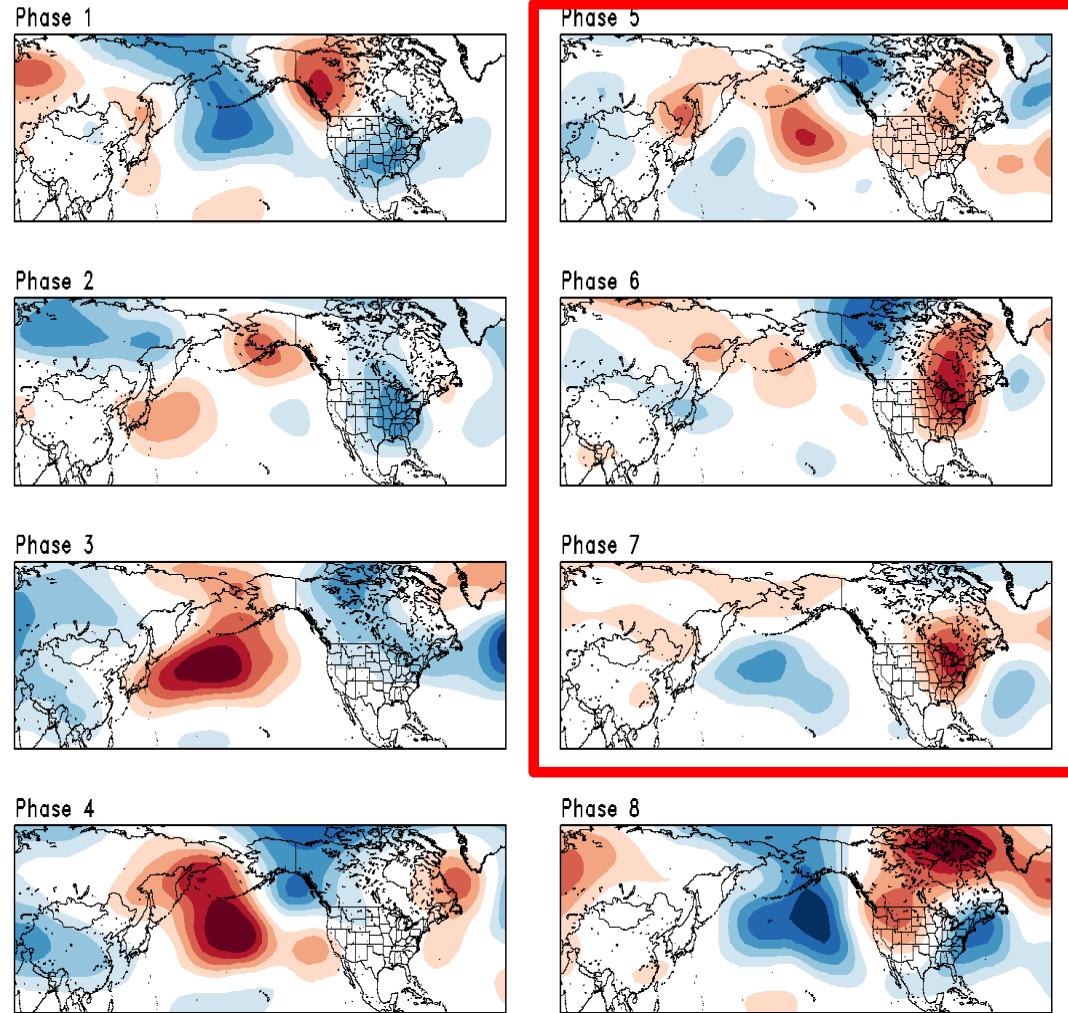


## AO Index: Observed & GEFS Forecasts

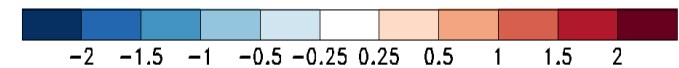
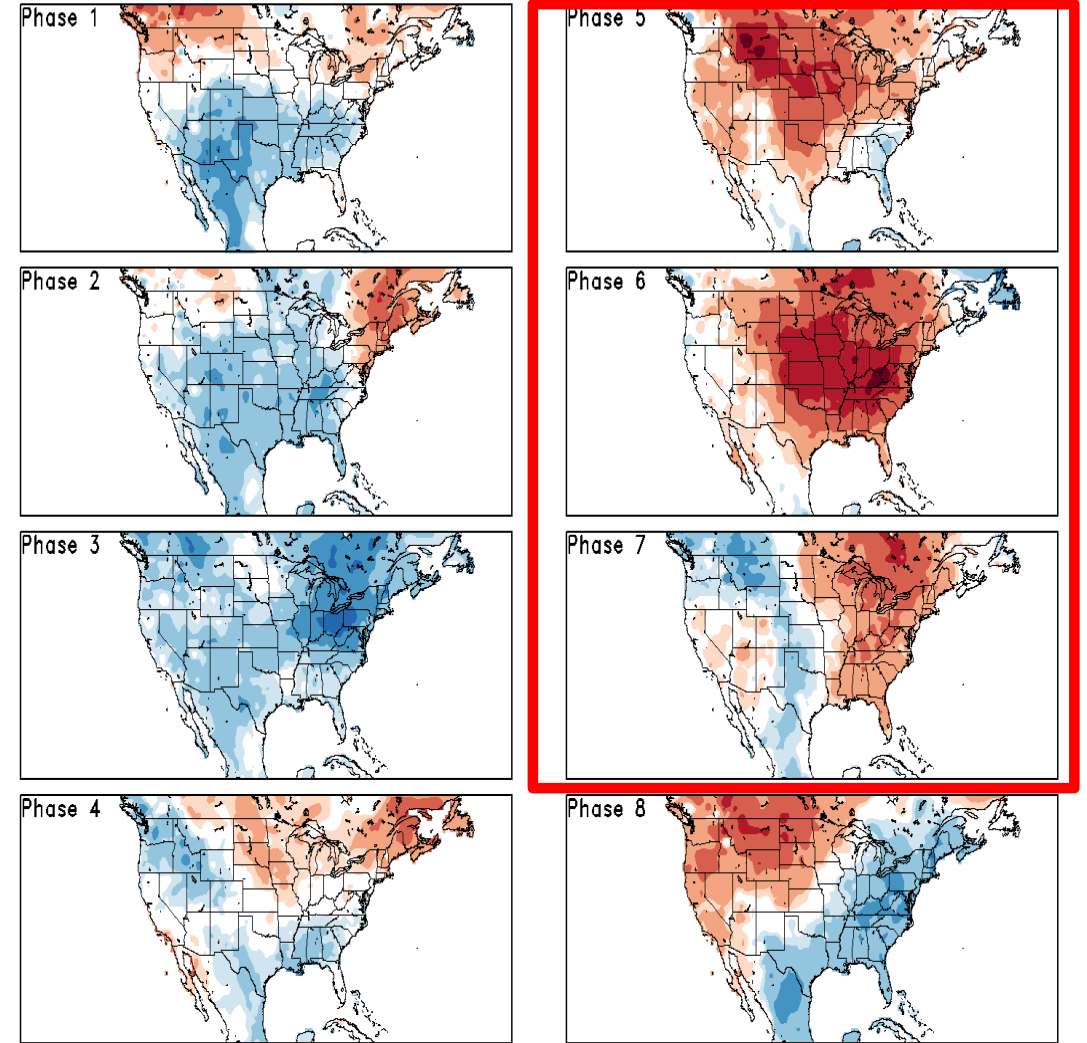


# Historical 500-hPa Height & U.S. Temperatures By MJO Phase:

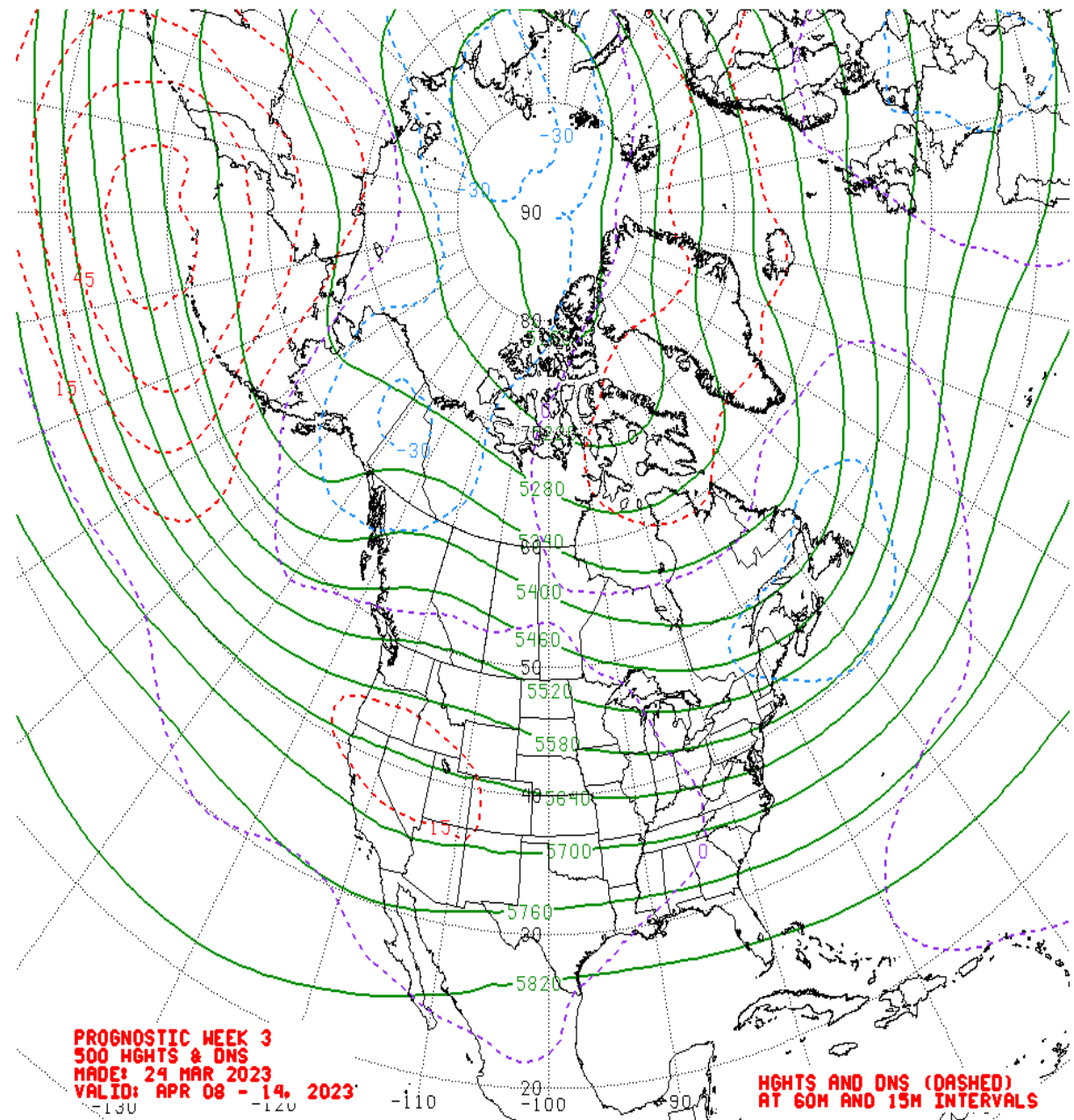
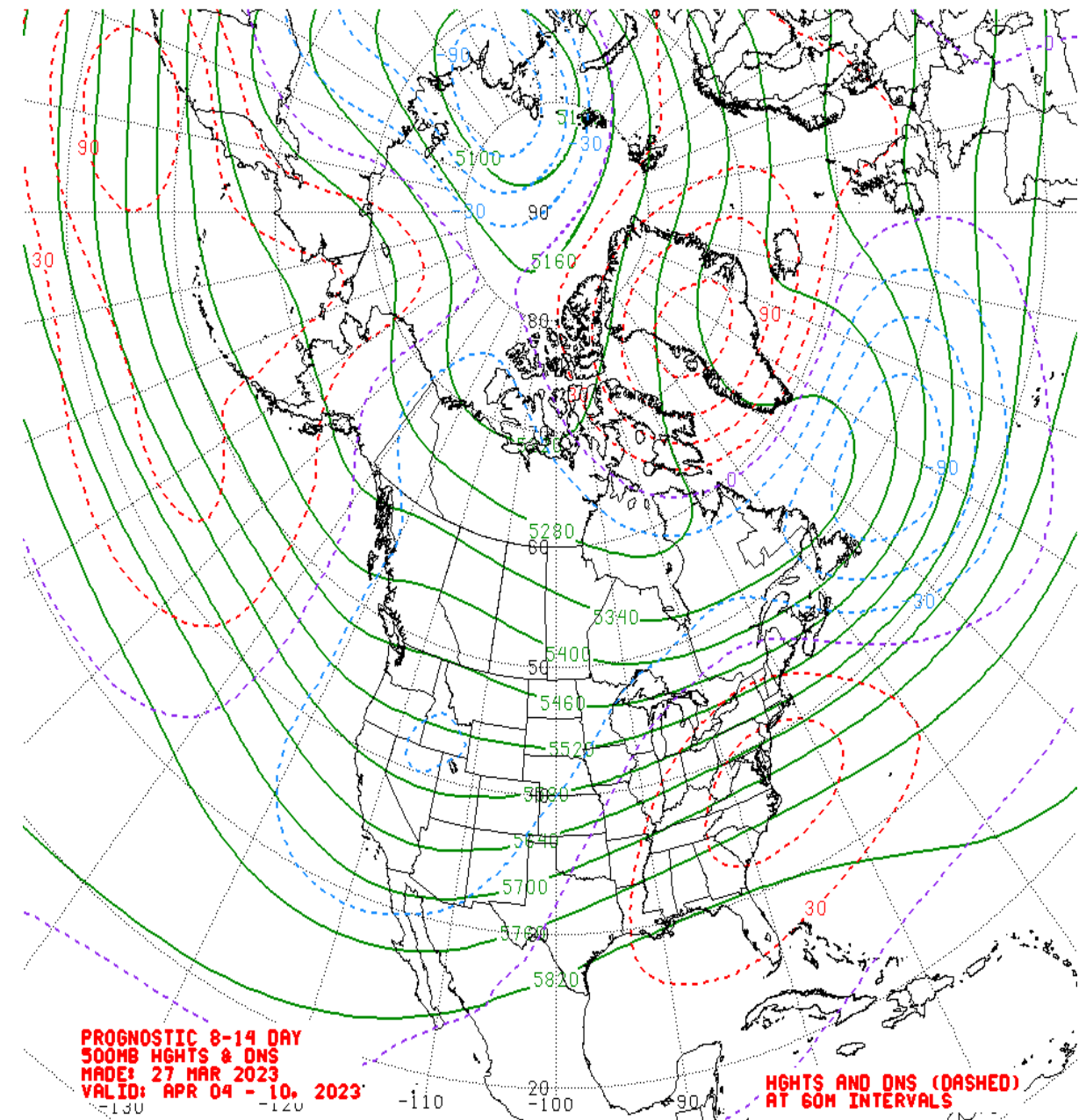
FMA MJO Composite: CDAS 500-hPa Height (m)



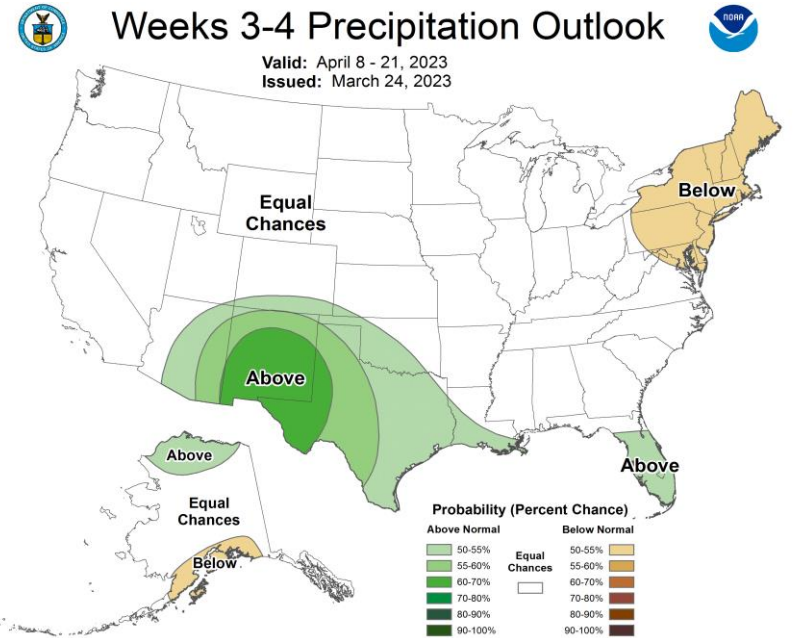
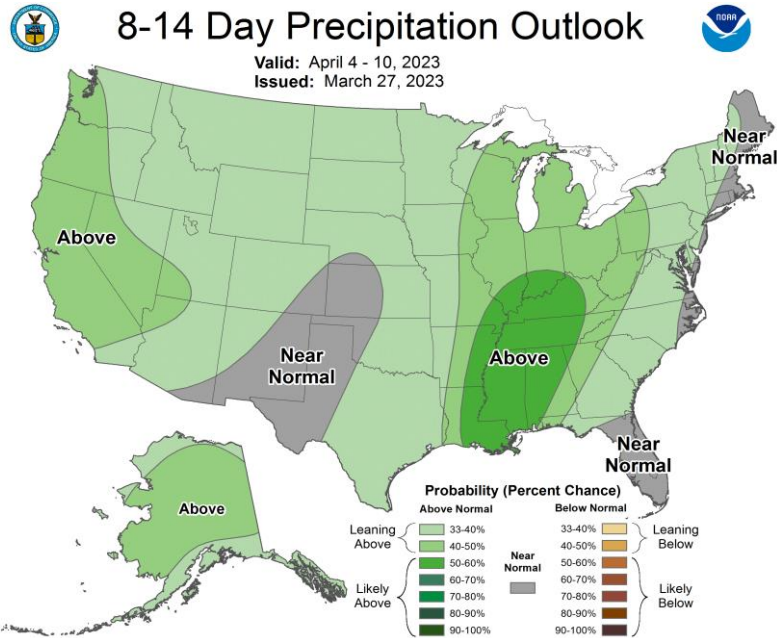
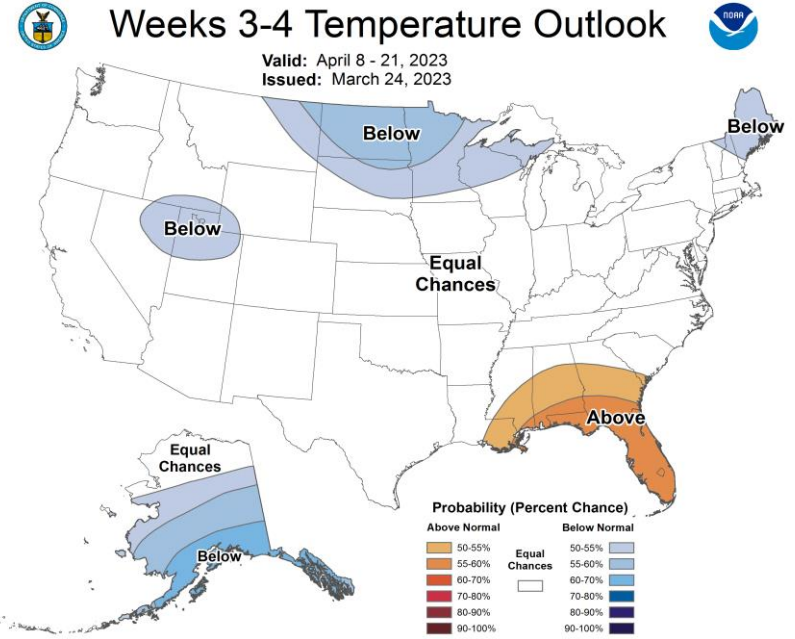
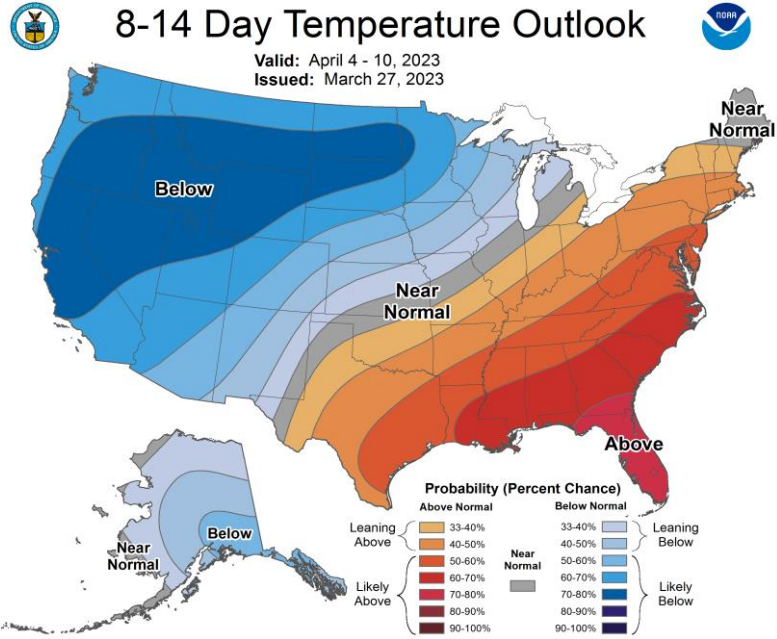
FMA MJO Composite: GLBT (degC)



# Mean 500-hPa Height Anomaly Forecasts:



# Official Temperature & Precipitation Forecasts:





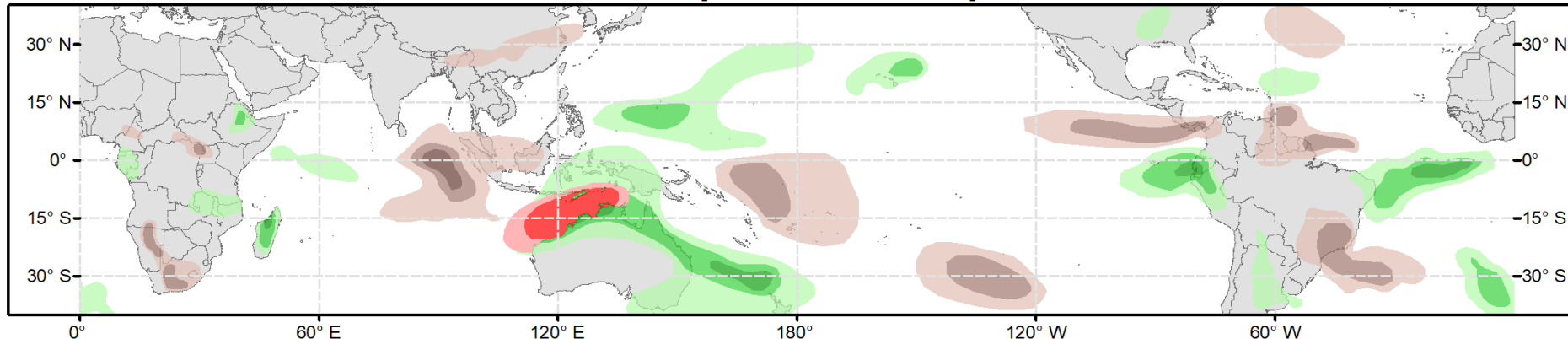


# Global Tropics Hazards Outlook

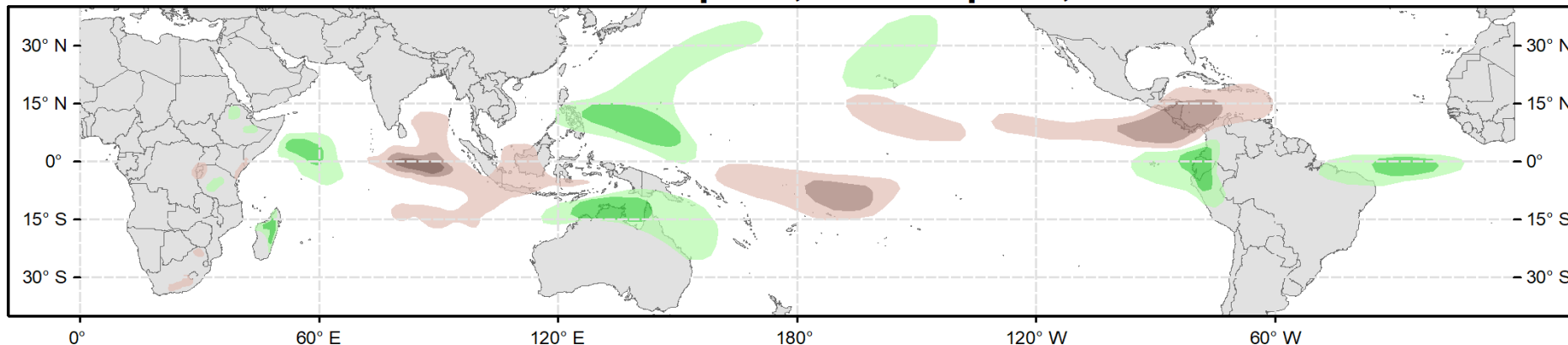
Climate Prediction Center



## Week 2 - Valid: Apr 05, 2023 - Apr 11, 2023



## Week 3 - Valid: Apr 12, 2023 - Apr 18, 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*

**Below-Average Temperatures Probability**

>50% >65% >80%

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

Issued: 03/28/2023  
Forecaster: Collow

This product is updated once per week and targets broad scale conditions integrated over a 7-day period for US interests only. Consult your local responsible forecast agency.