



# Weeks 2-3 Global Tropics Hazards Outlook

3/21/2023

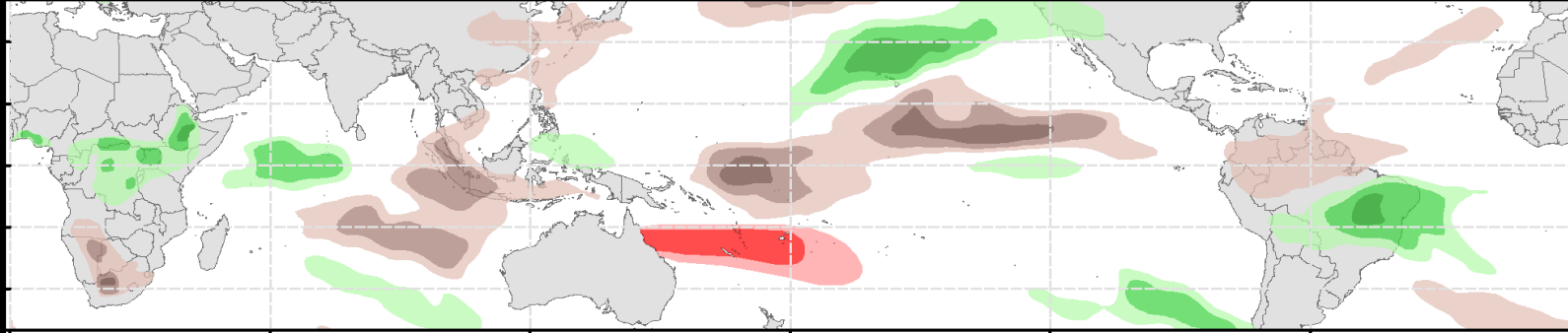
Nick Novella

NWS / NCEP / Climate Prediction Center

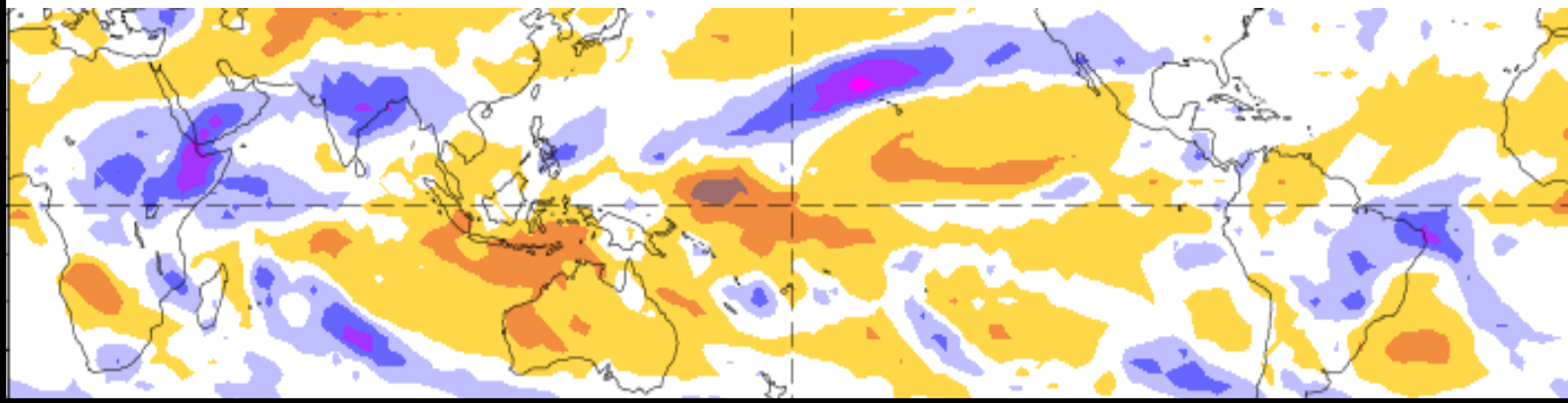
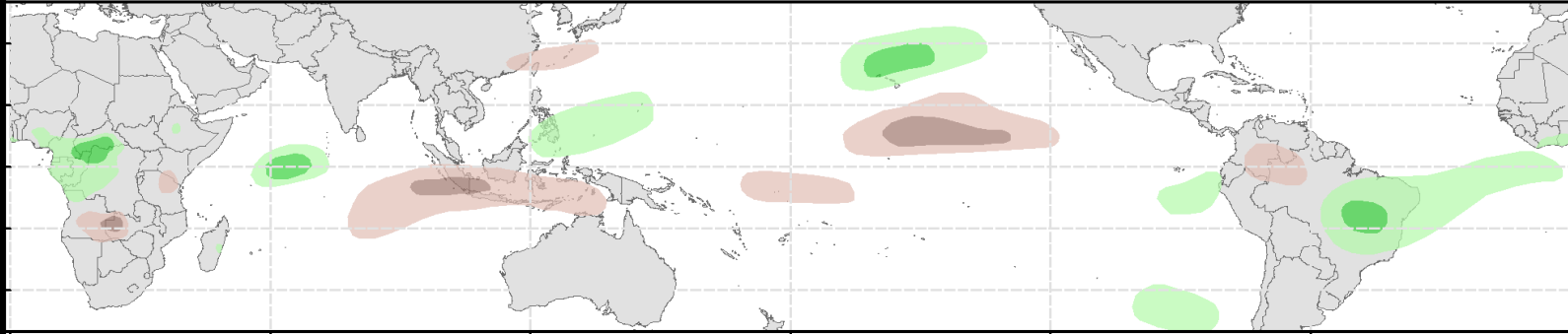
# Outlook Review: TC development & anomalous precipitation during the past week

- No TCs formed during the last seven days.

**Week 2 - Valid: Mar 15, 2023 - Mar 21, 2023**



**Week 3 - Valid: Mar 15, 2023 - Mar 21, 2023**



# Synopsis of Climate Modes:

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**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:**

- Strong MJO activity remains evident in the observations and the RMM index shows the enhanced phase shifting eastward across the Western Hemisphere where it is about to enter the Indian Ocean (phase 2).
- Good agreement exists in the RMM forecasts depicting a much weakened MJO during the next two weeks, however there is little confidence in this realization mainly due to a more coherent outlook favored in the upper-level velocity potential forecasts and models difficulty in propagating a healthy MJO signal into the Maritime Continent.
- The large-scale environment is expected to be favorable (unfavorable) for tropical cyclogenesis over the Indian (South Pacific).
- A coherent Maritime Continent MJO event would favor increasing mid-level heights and above-normal temperatures over parts of the eastern CONUS later in April. A residual atmospheric signature tied to the outgoing La Nina is also expected to play a role in the downstream response as well.

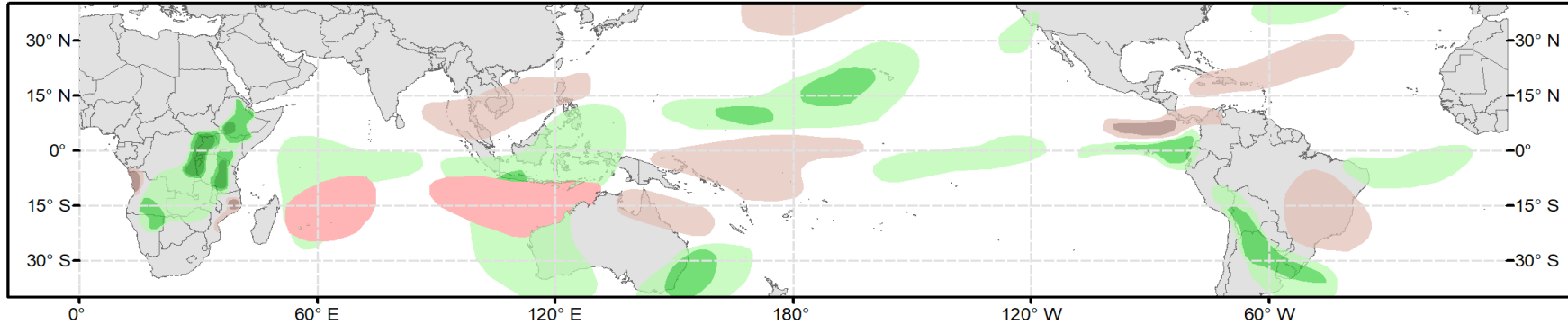
# GTH Outlook:



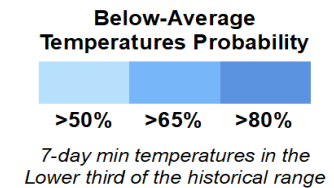
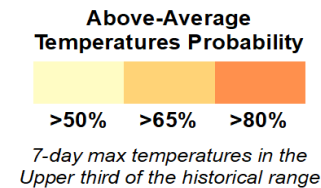
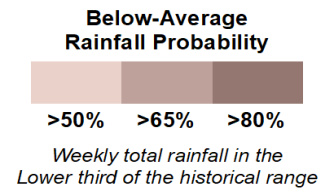
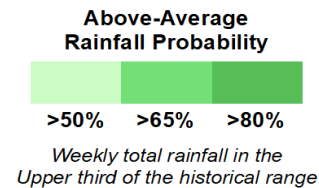
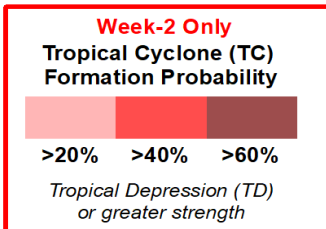
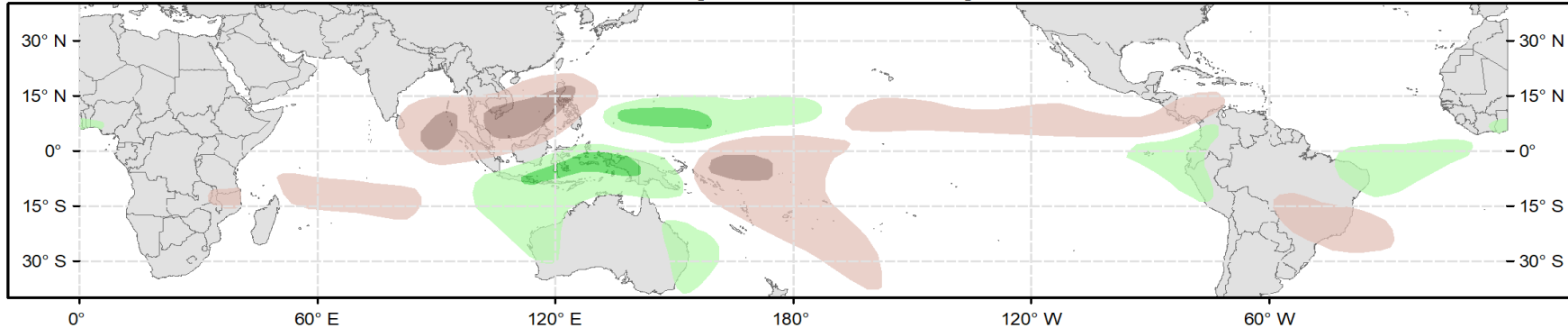
## Global Tropics Hazards Outlook Climate Prediction Center



**Week 2 - Valid: Mar 29, 2023 - Apr 04, 2023**



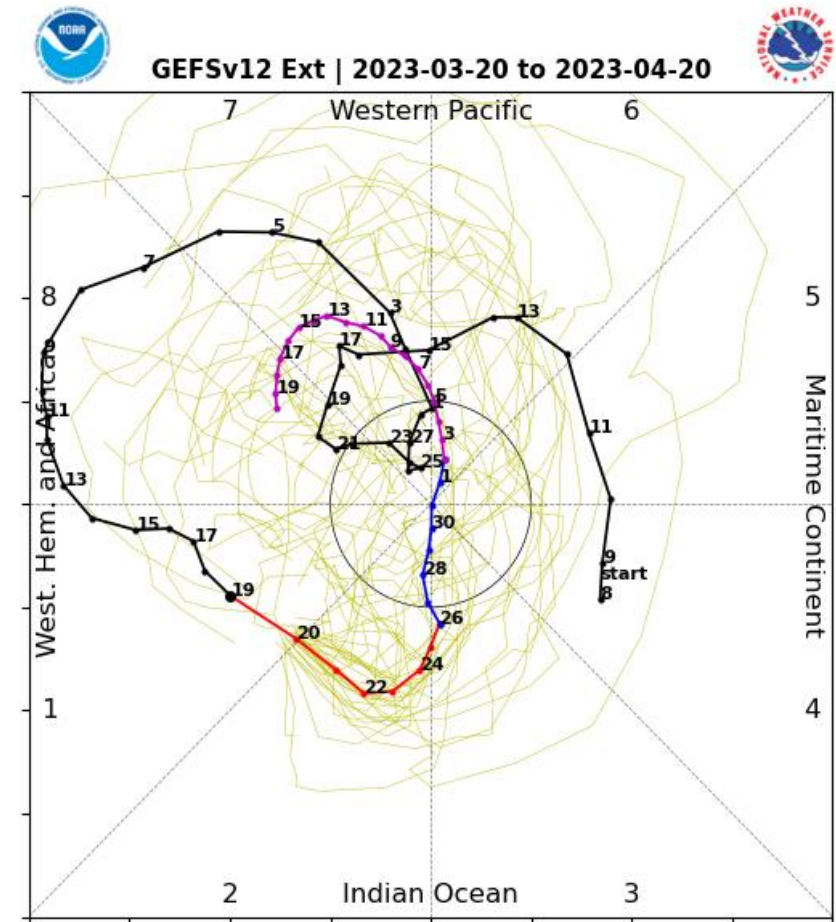
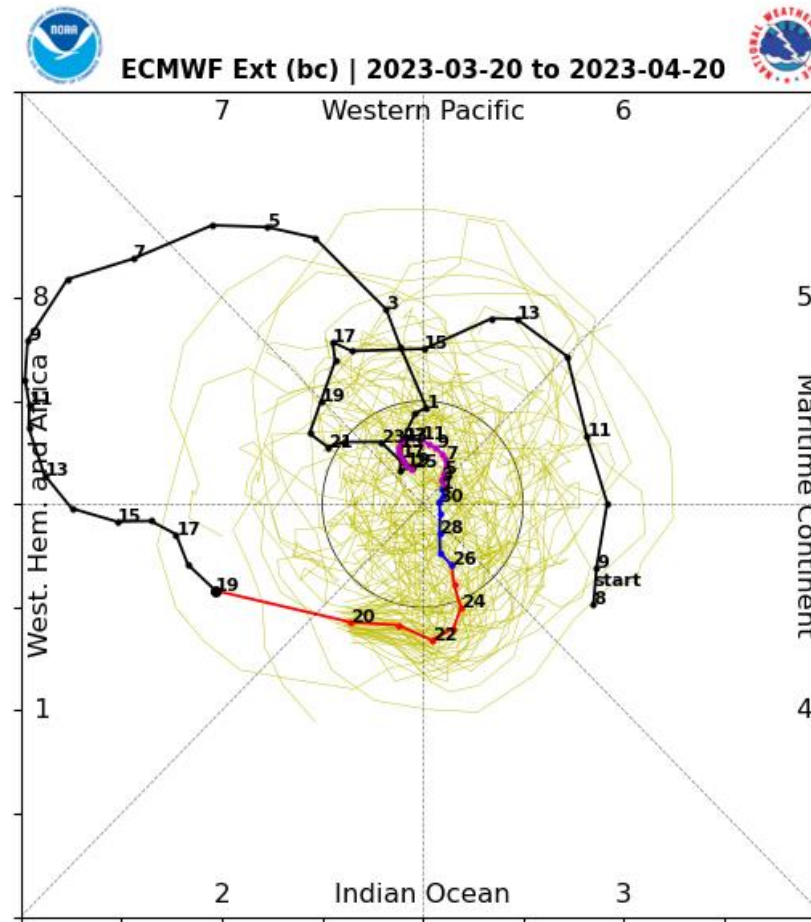
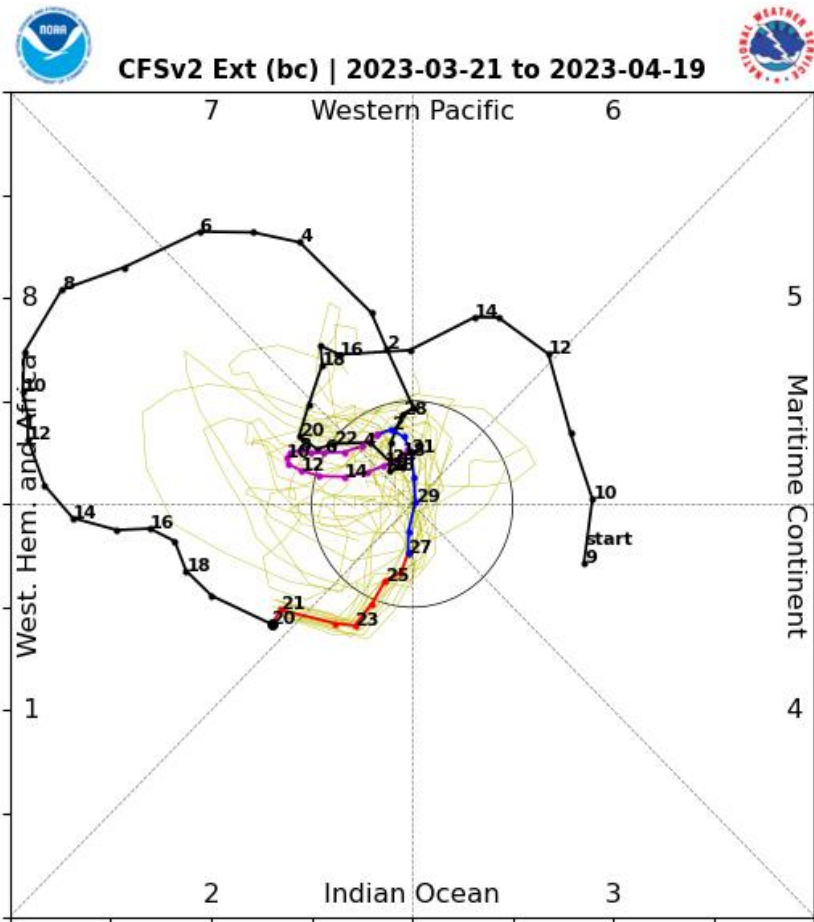
**Week 3 - Valid: Apr 05, 2023 - Apr 11, 2023**



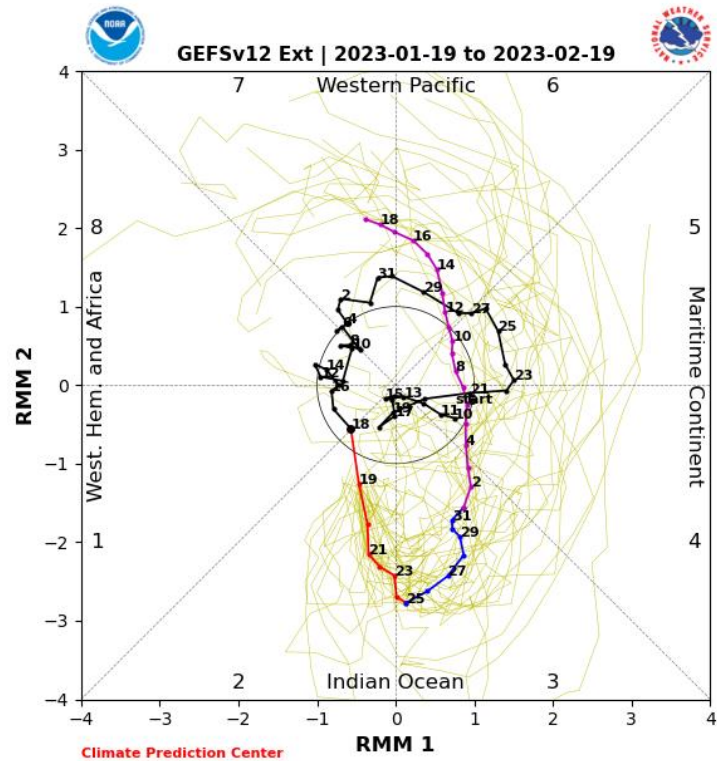
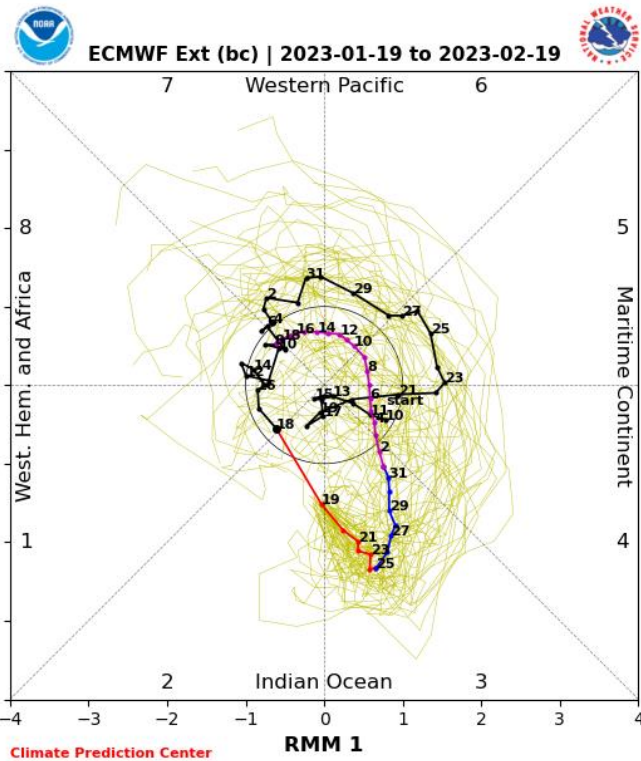
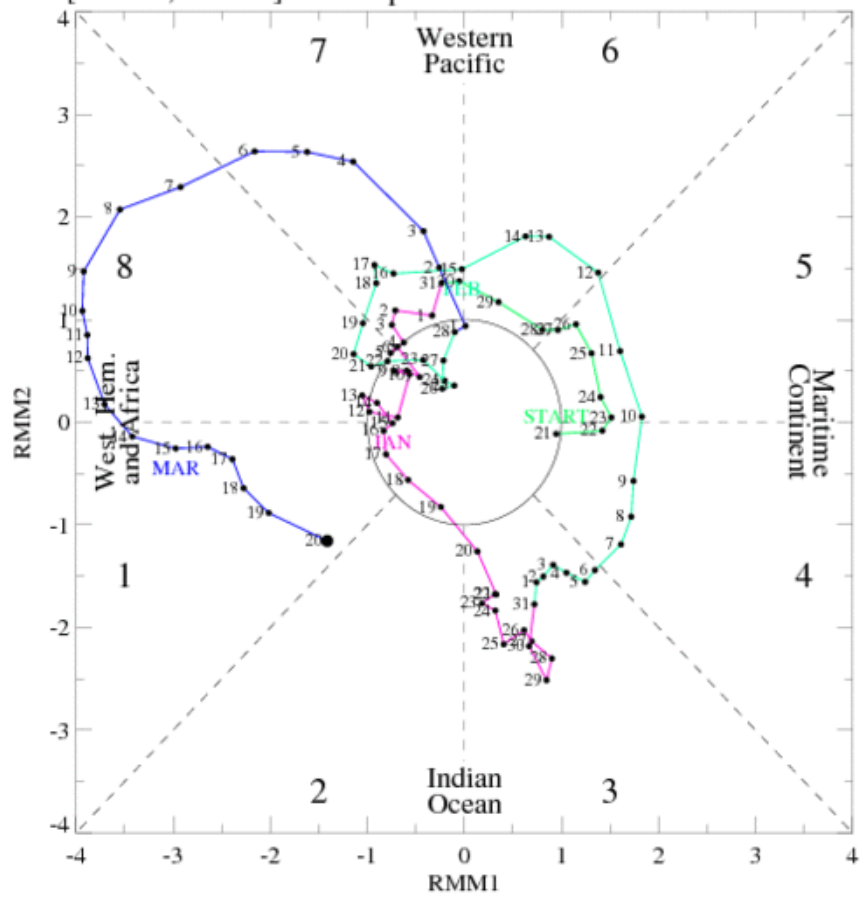
**Issued: 03/21/2023**  
**Forecaster: Novella**

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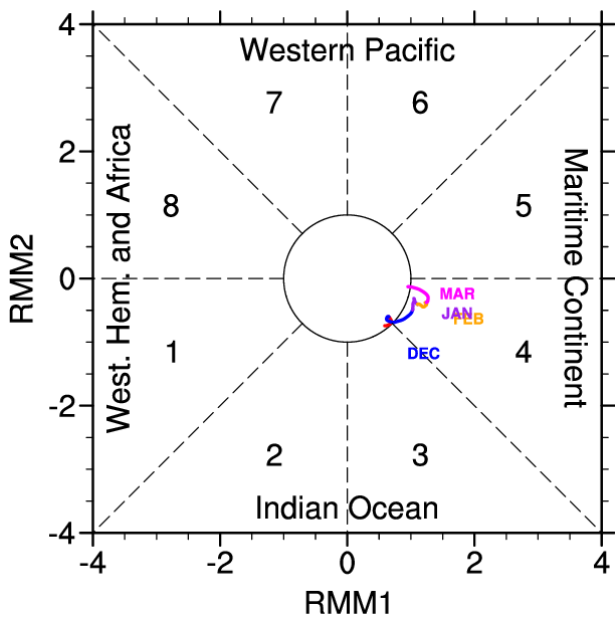
# RMM Index Observations & Forecasts:



[RMM1, RMM2] Phase Space for 21-Dec-2022 to 20-Mar-2023



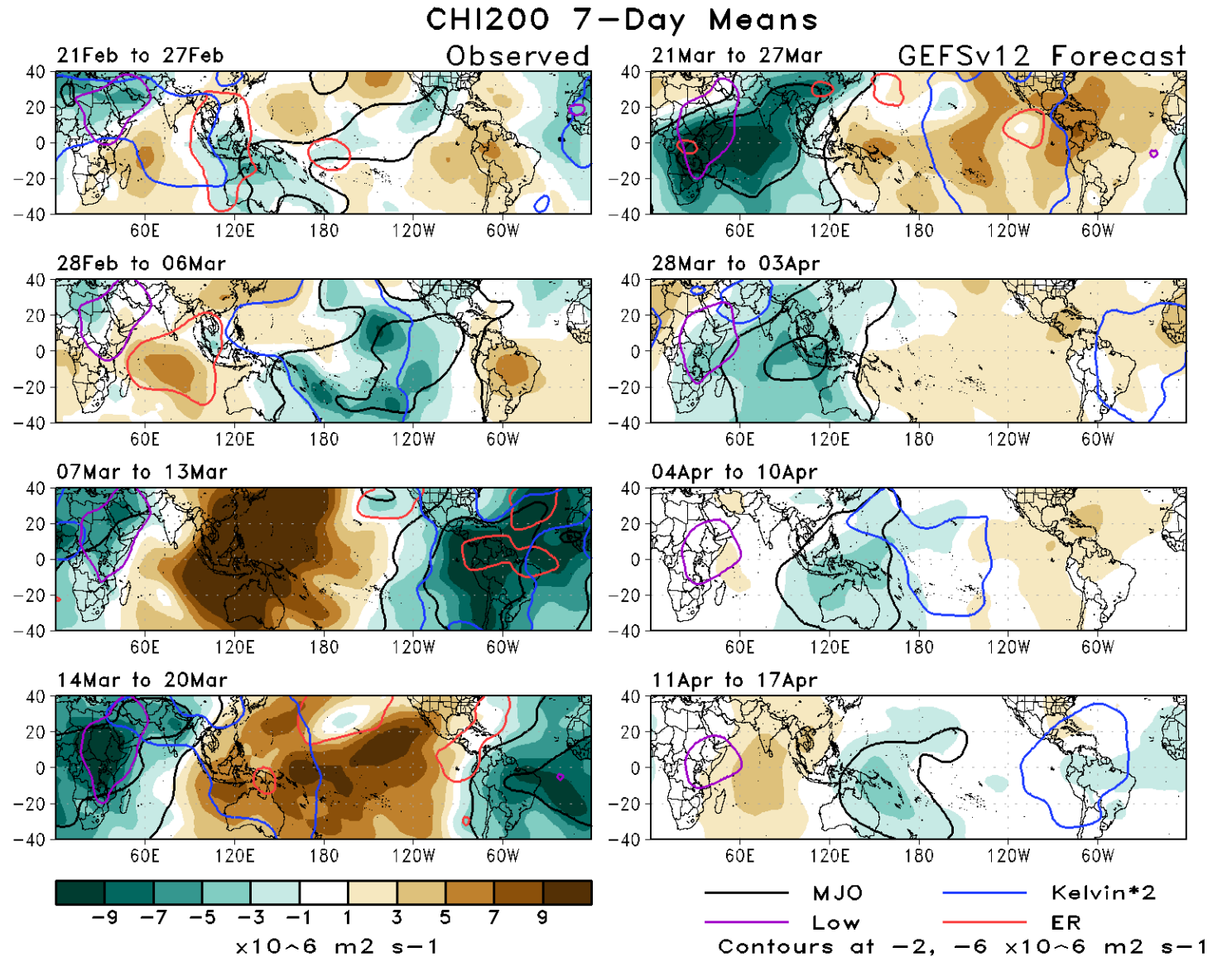
18-Nov-2022 to 18-Mar-2023



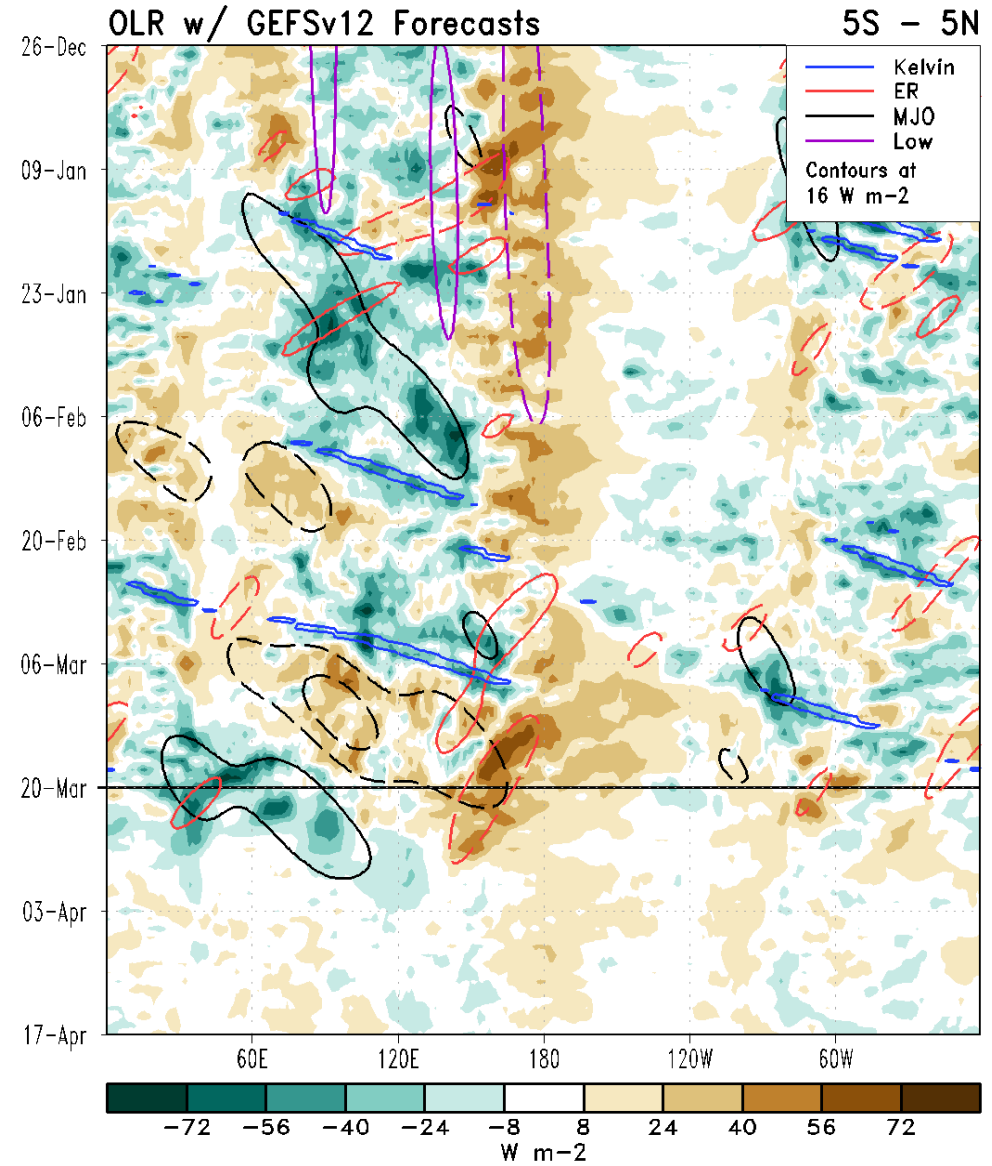
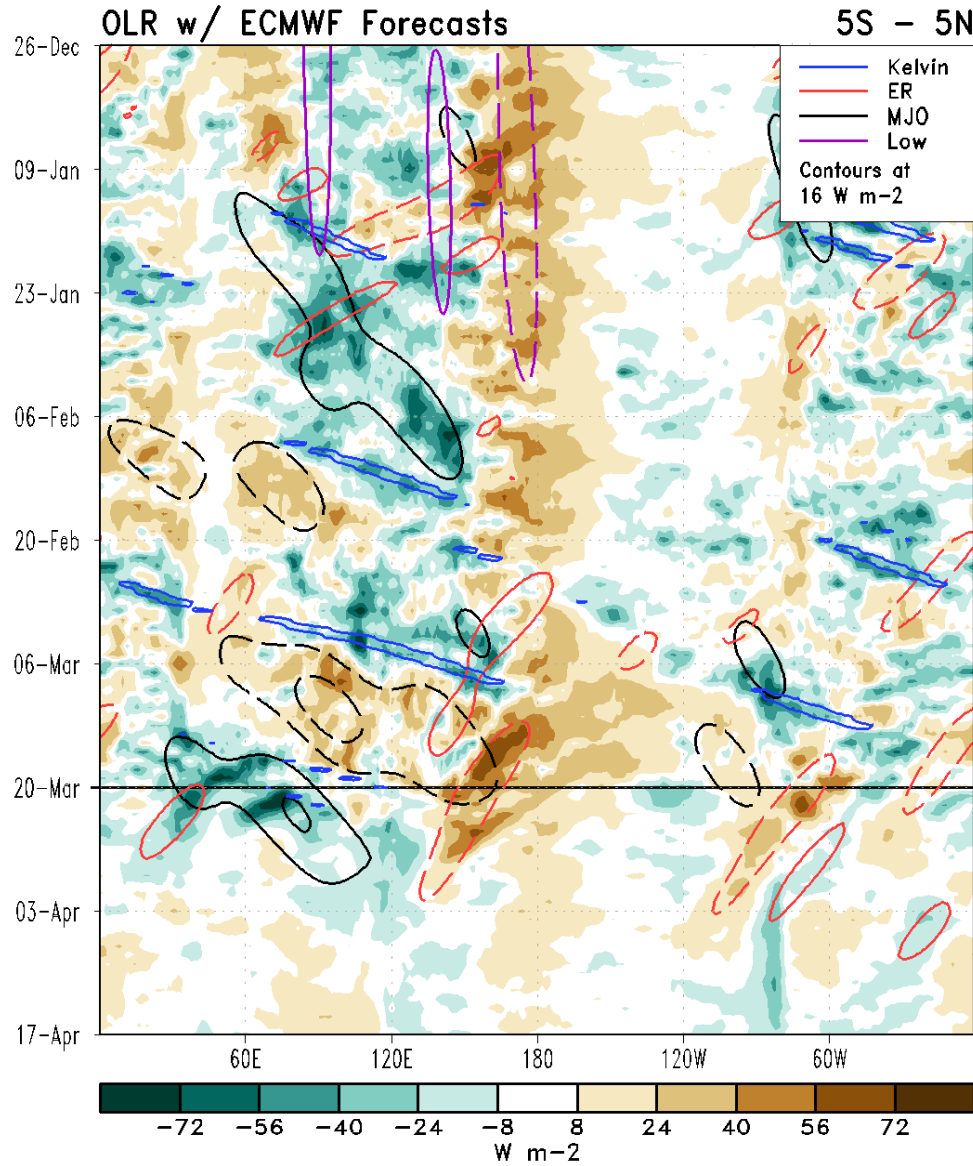
# 200-hPa Velocity Potential Anomaly Maps:

Green: Enhanced Divergence Aloft    Brown: Enhanced Convergence Aloft

- Velocity potential forecasts are more supportive a coherent MJO propagating across the Indian Ocean and into the Maritime Continent, albeit at a slower amplitude compared to earlier in March.



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

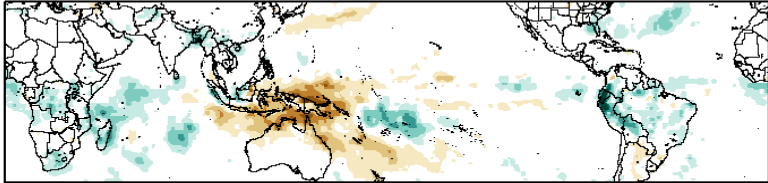




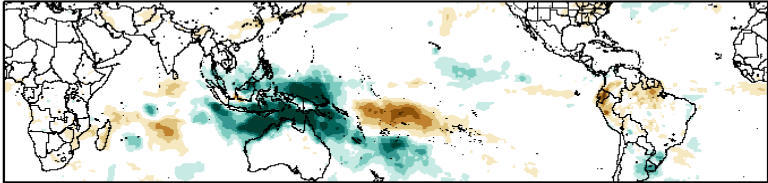
# Historical Precipitation Anomalies By MJO Phase:

FMA MJO Composite: GPCP1DD (mm/day)

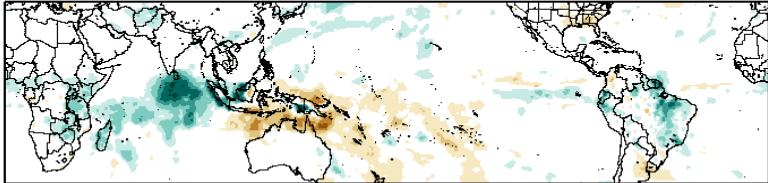
Phase 1



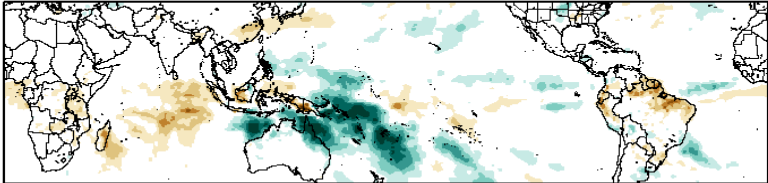
Phase 5



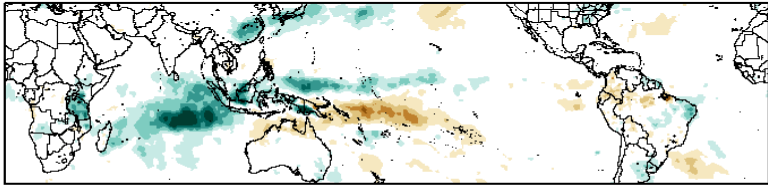
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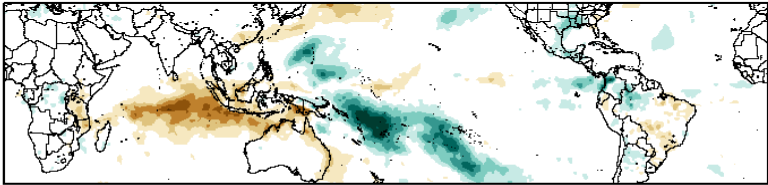
Phase 6



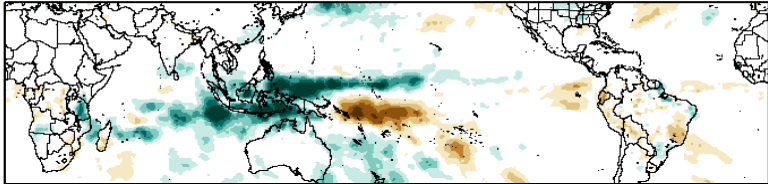
Phase 3



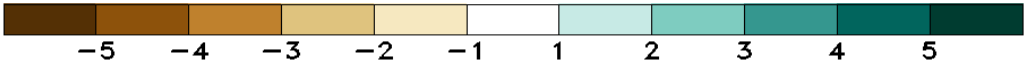
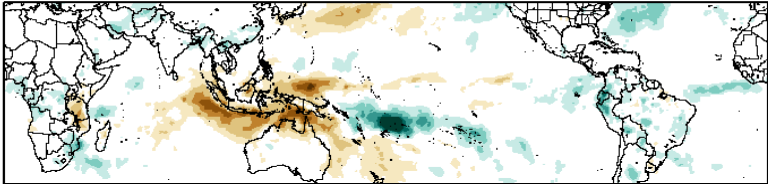
Phase 7



Phase 4



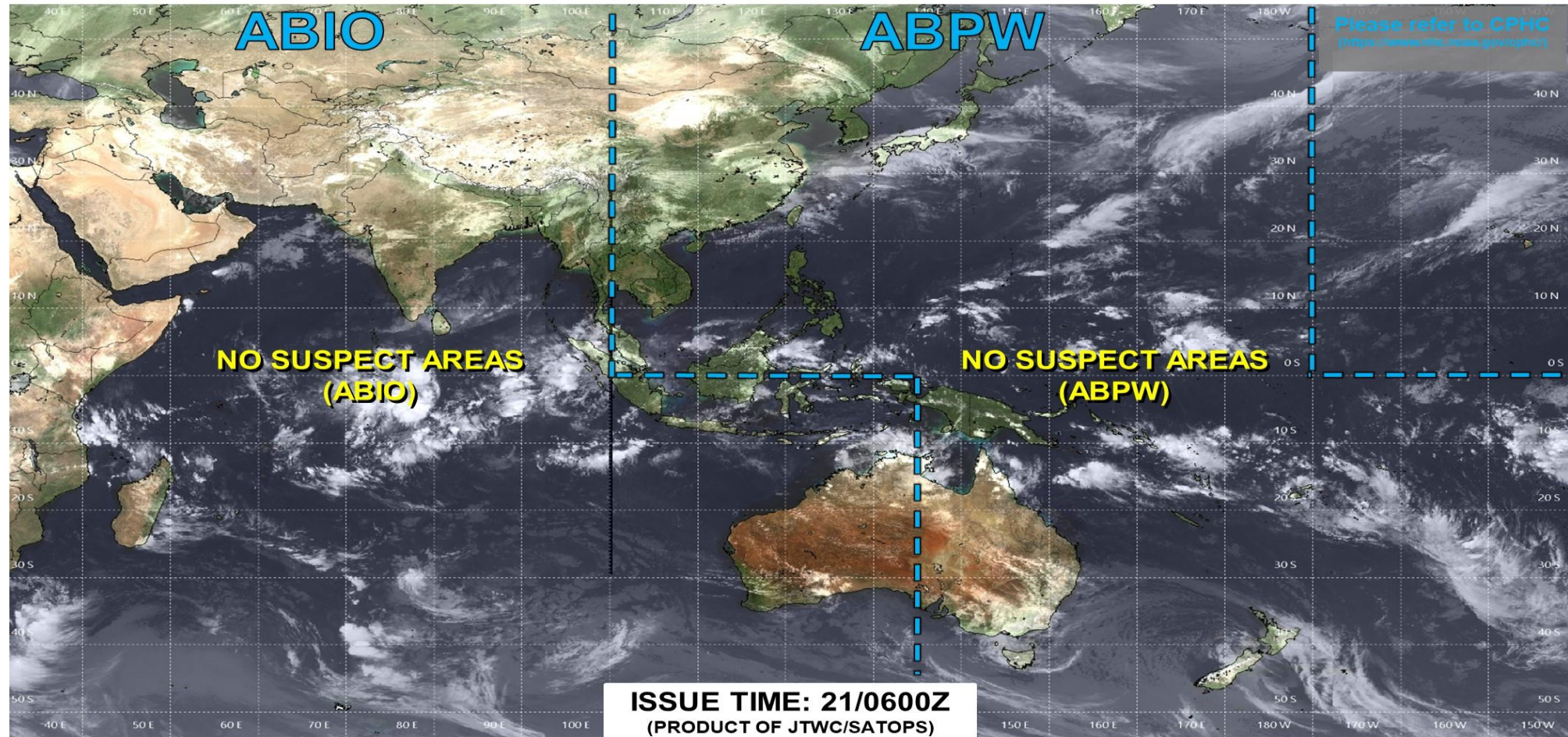
Phase 8



# 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)



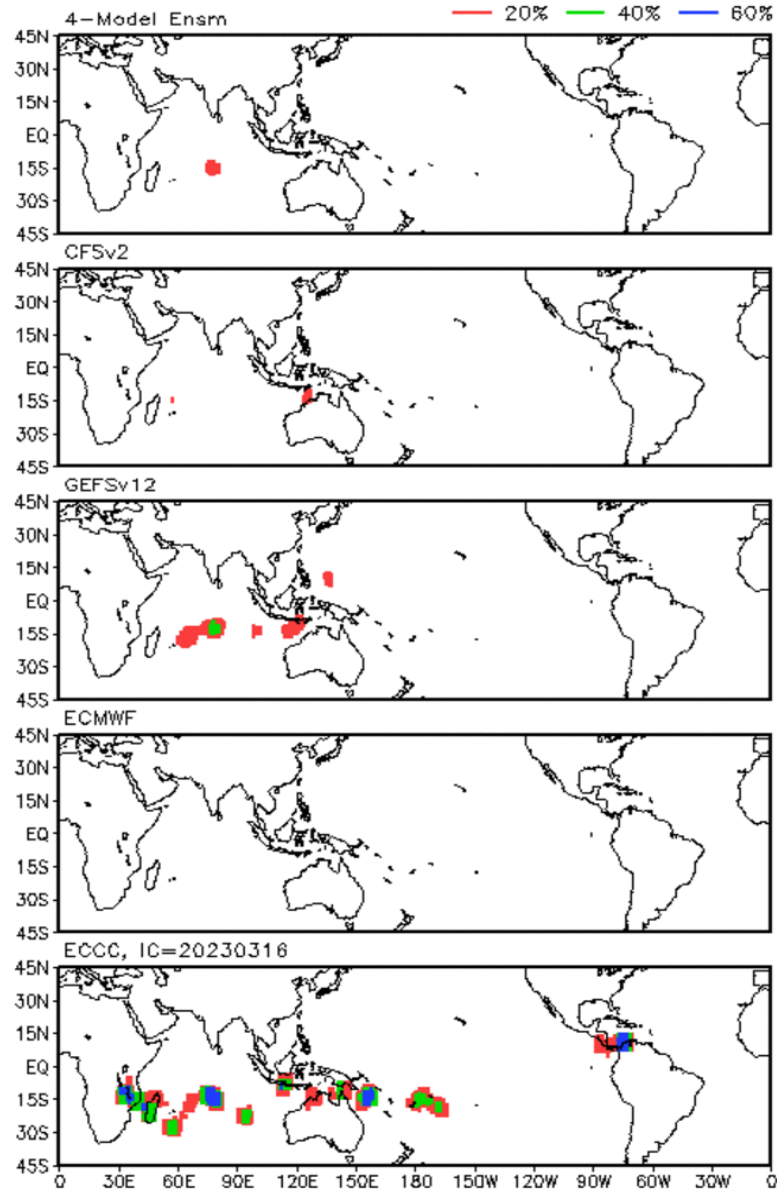
Monitoring for potential transition to TC. Invest label color denotes tropical transition probability



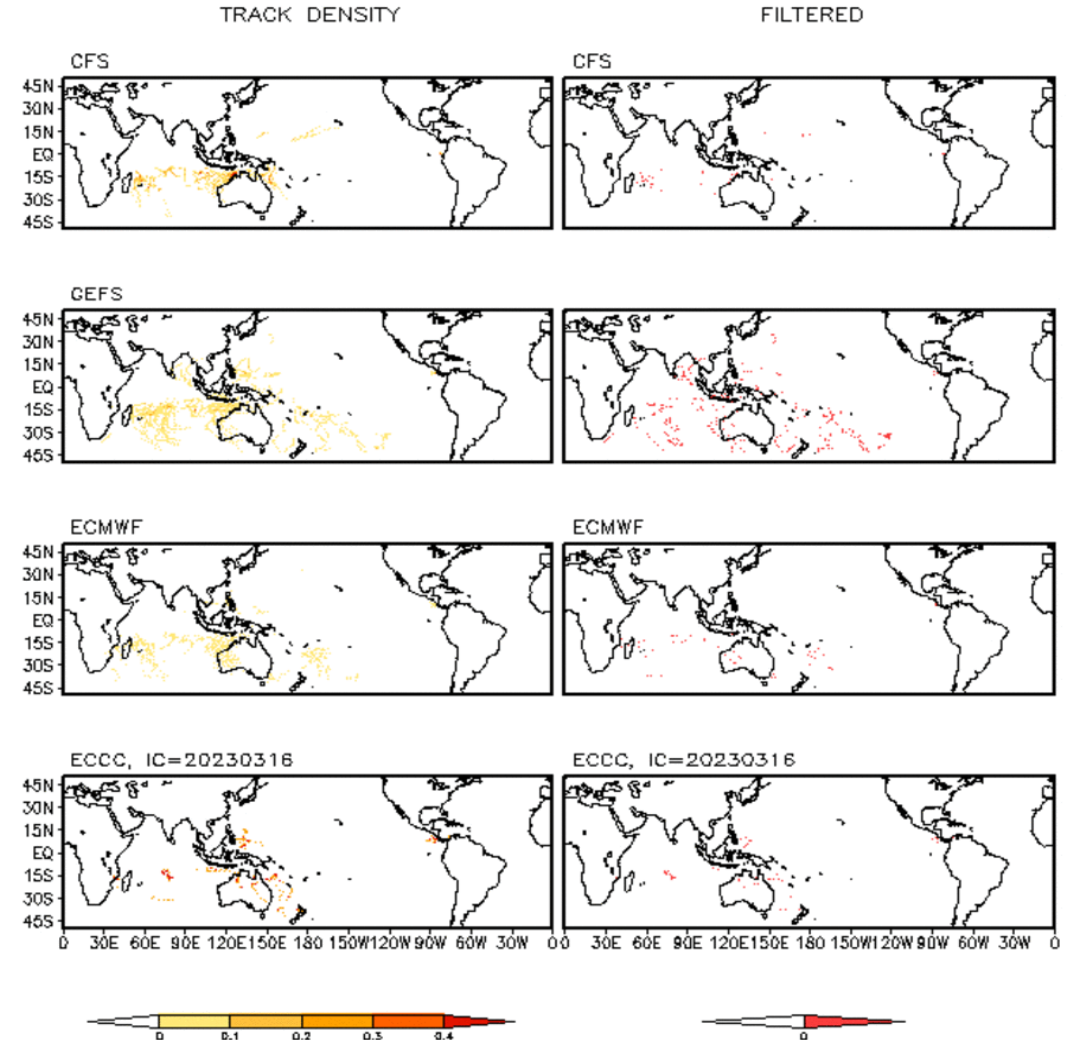
Tropical Cyclone (Reference Warning)

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

Storm Track Probabilities, IC=20230320  
Week 2: 0329 - 0404

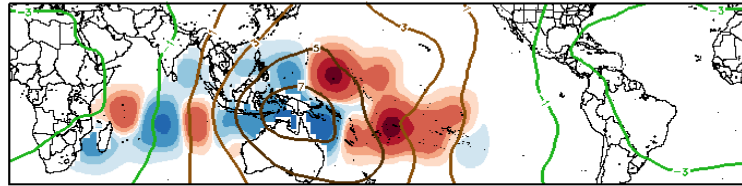


Storm Track Density Distribution, IC=20230320  
Week 2 Forecast: 0329-0404

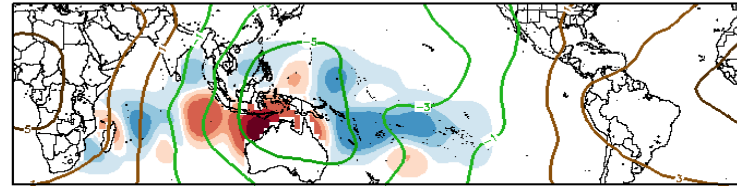


# Historical TC Origin Anomalies By MJO Phase & Weeks 2+3 Genesis Climo:

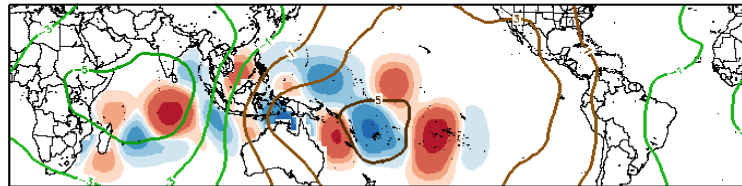
FMA MJO Composite: Mean TC Origin Density Anomaly ( $\#TCs/277km^2*100$ )  
w/ FMA CHI200 ( $\times 10^6 m^2 s^{-1}$ ) / Contours every  $2 \times 10^6 m^2 s^{-1}$



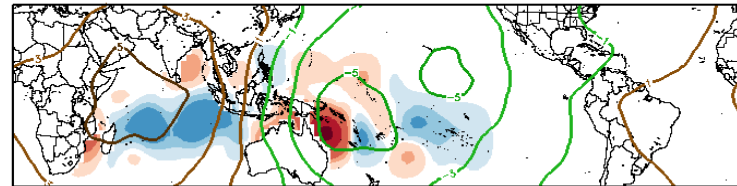
Phase 1



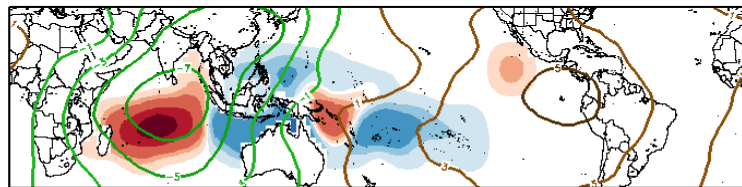
Phase 5



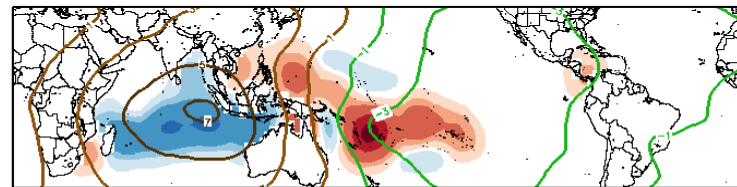
Phase 2



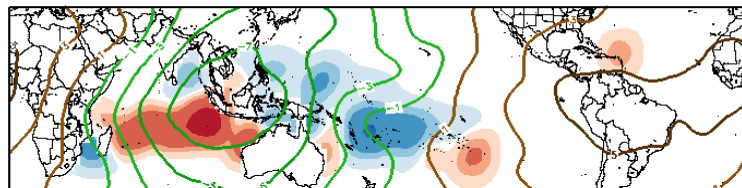
Phase 6



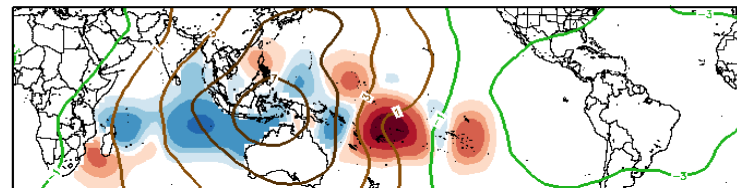
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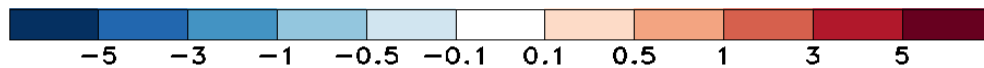
Phase 7



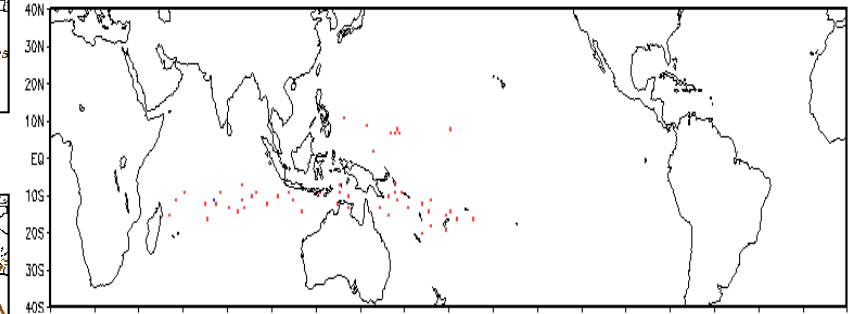
Phase 4



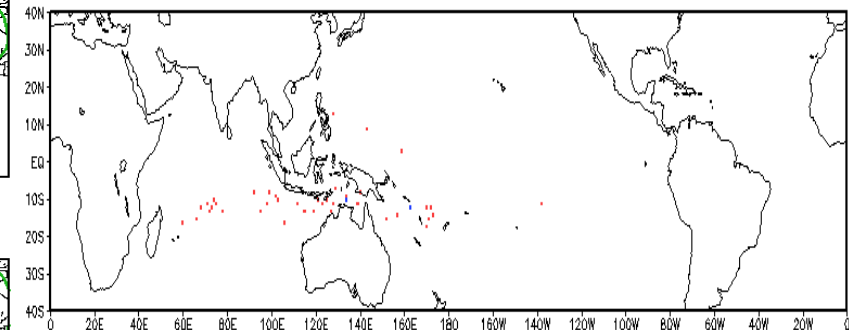
Phase 8



Observed TC Genesis, 1979–2021  
7-day Period 0329 to 0404

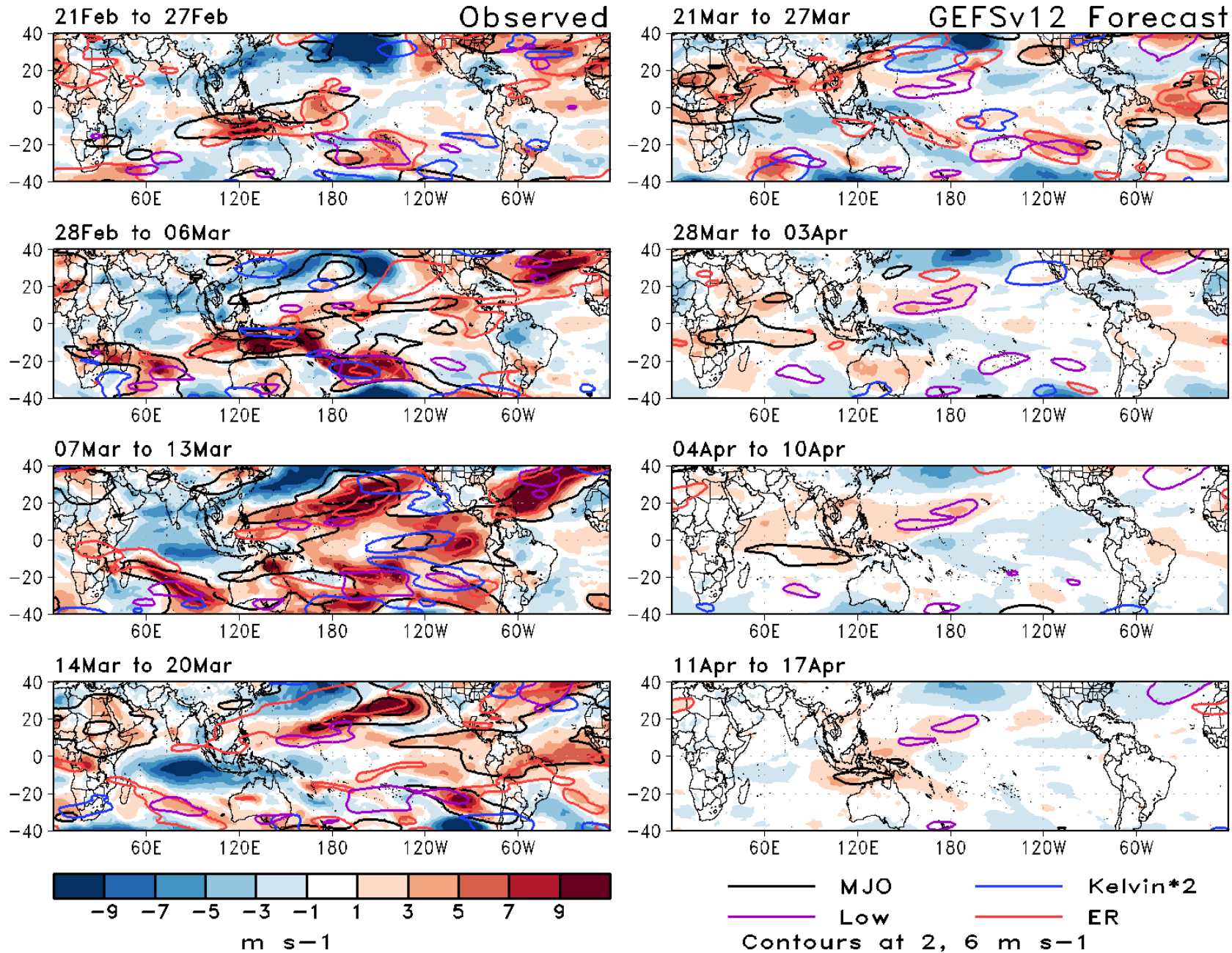


Observed TC Genesis, 1979–2021  
7-day Period 0405 to 0411



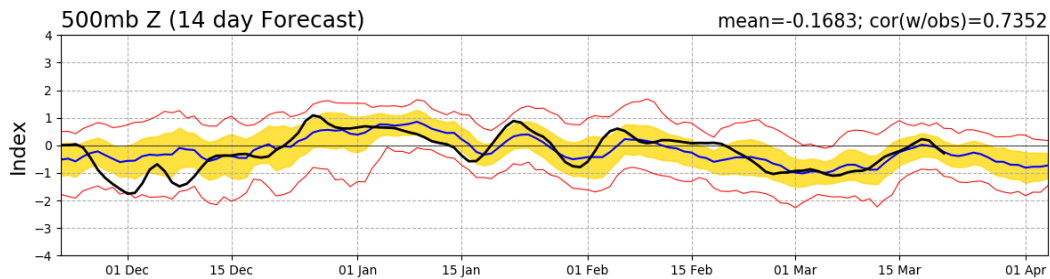
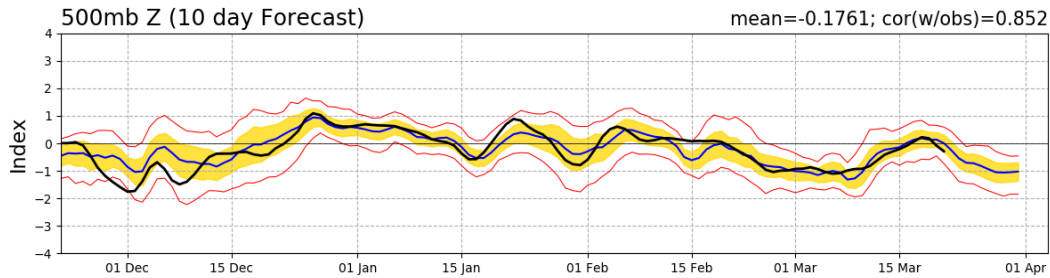
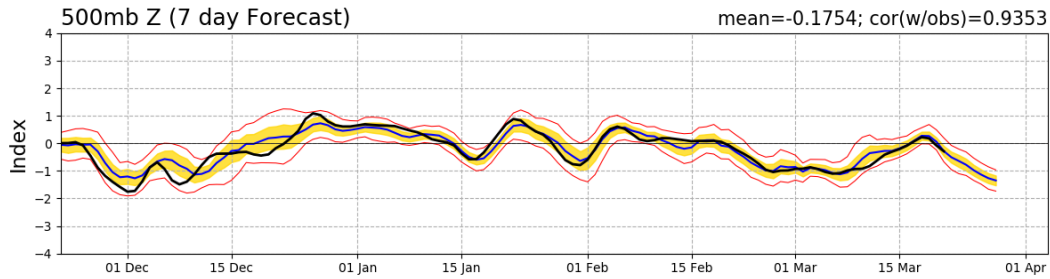
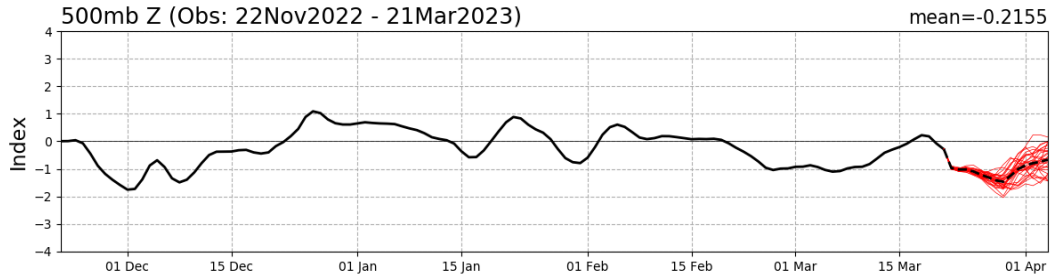
\*Experimental\*

# UWND850 7-Day Means

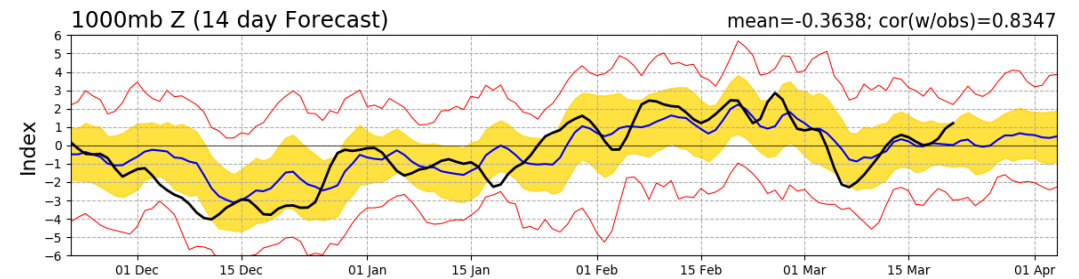
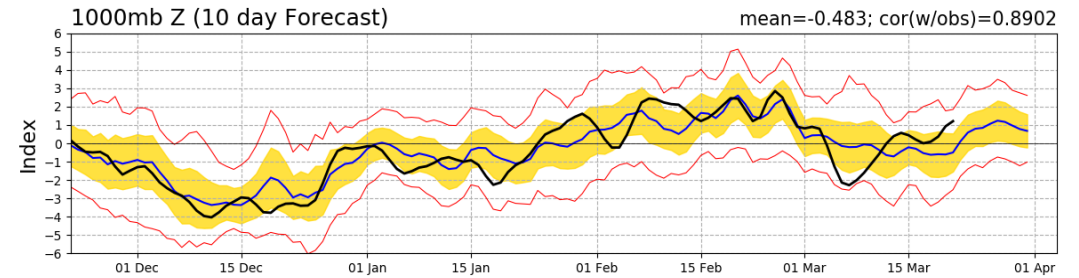
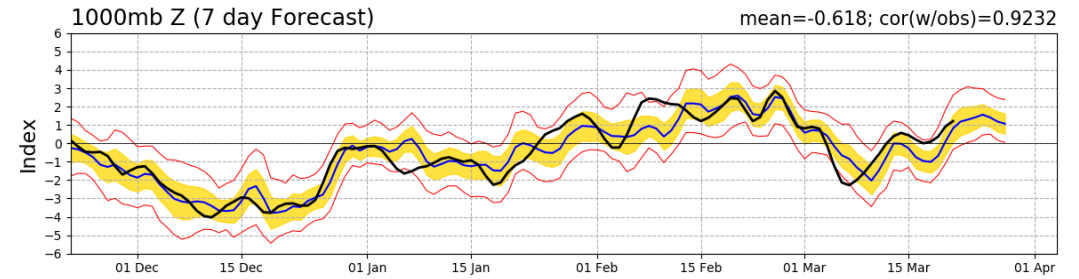
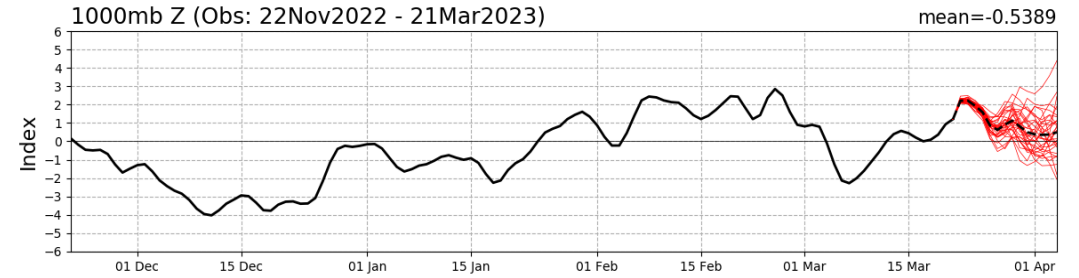


# Teleconnection Indices: PNA / AO:

## PNA Index: Observed & GEFS Forecasts



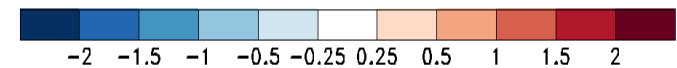
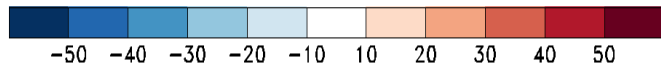
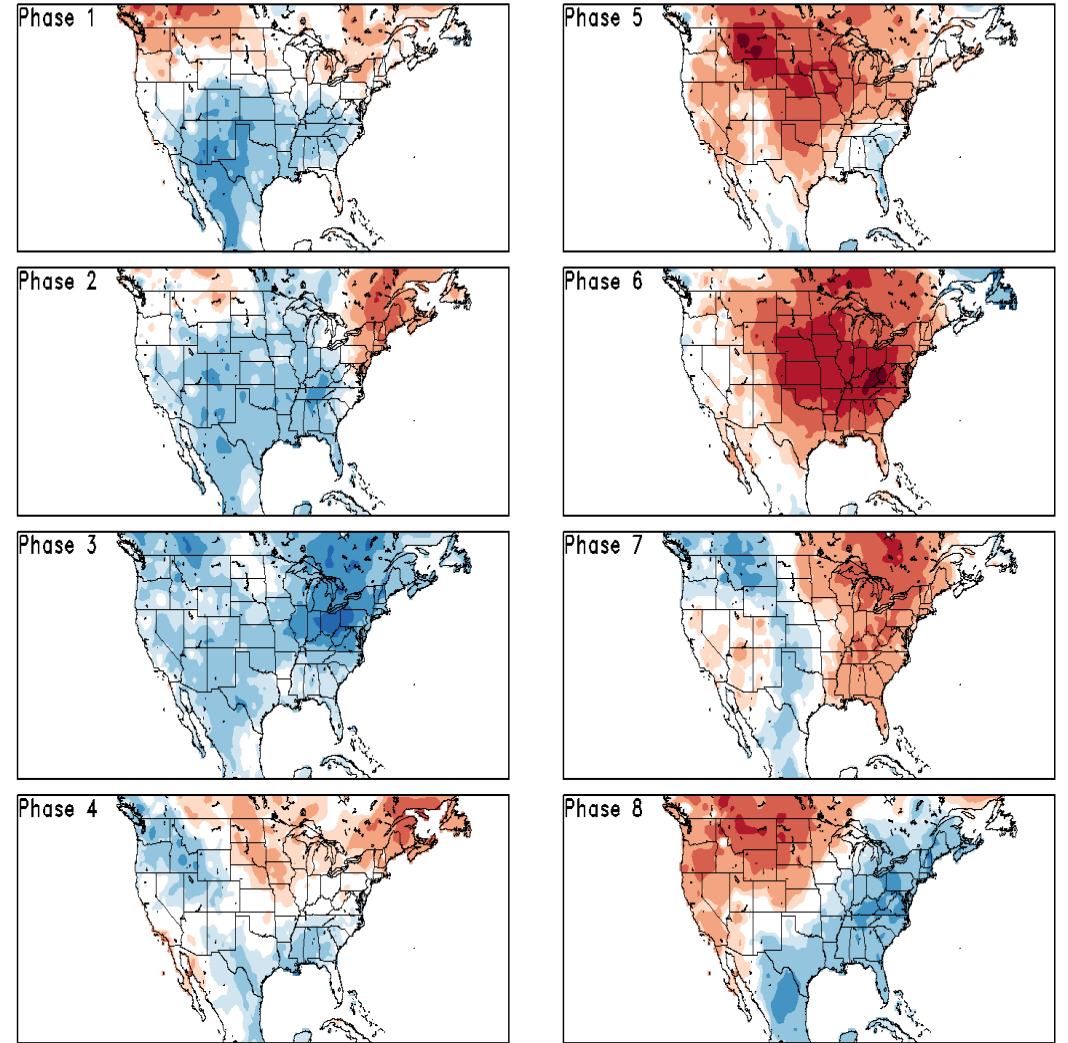
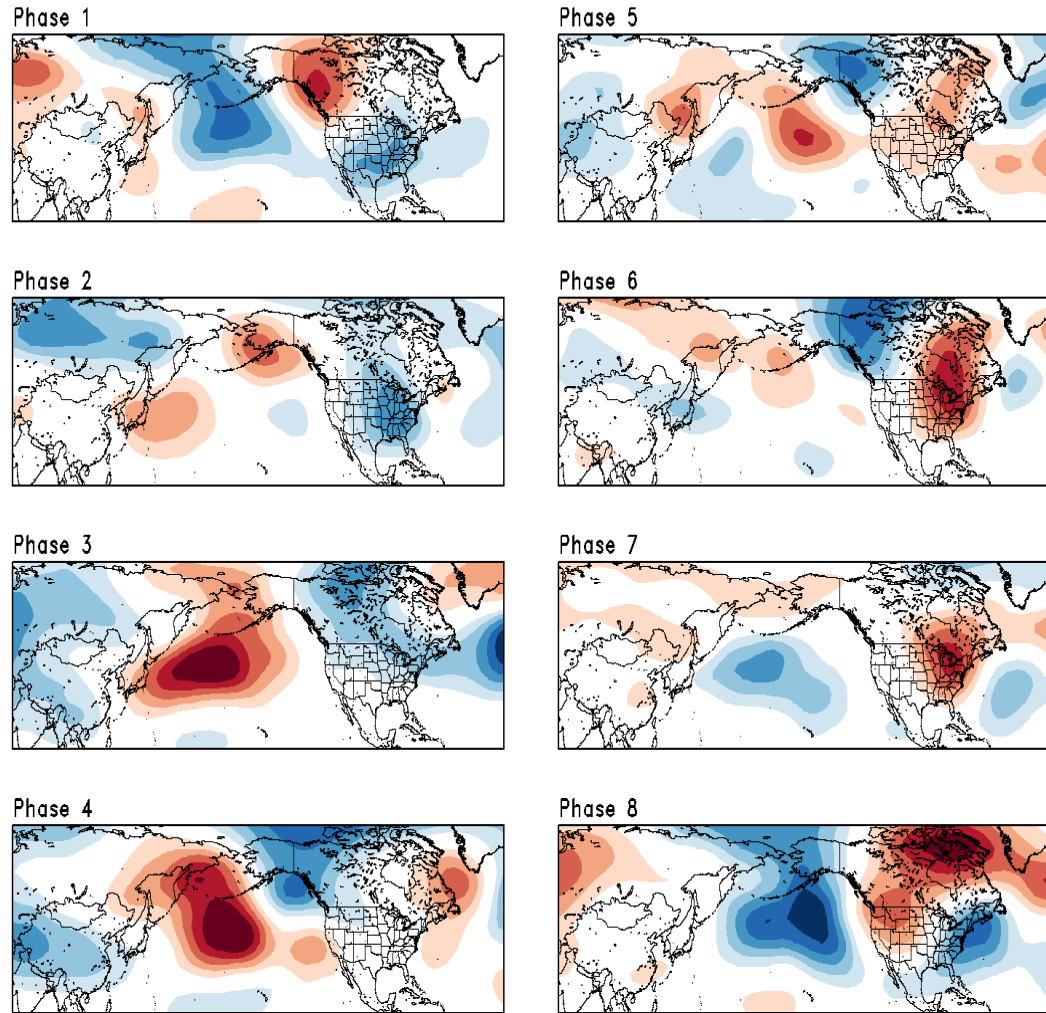
## AO Index: Observed & GEFS Forecasts



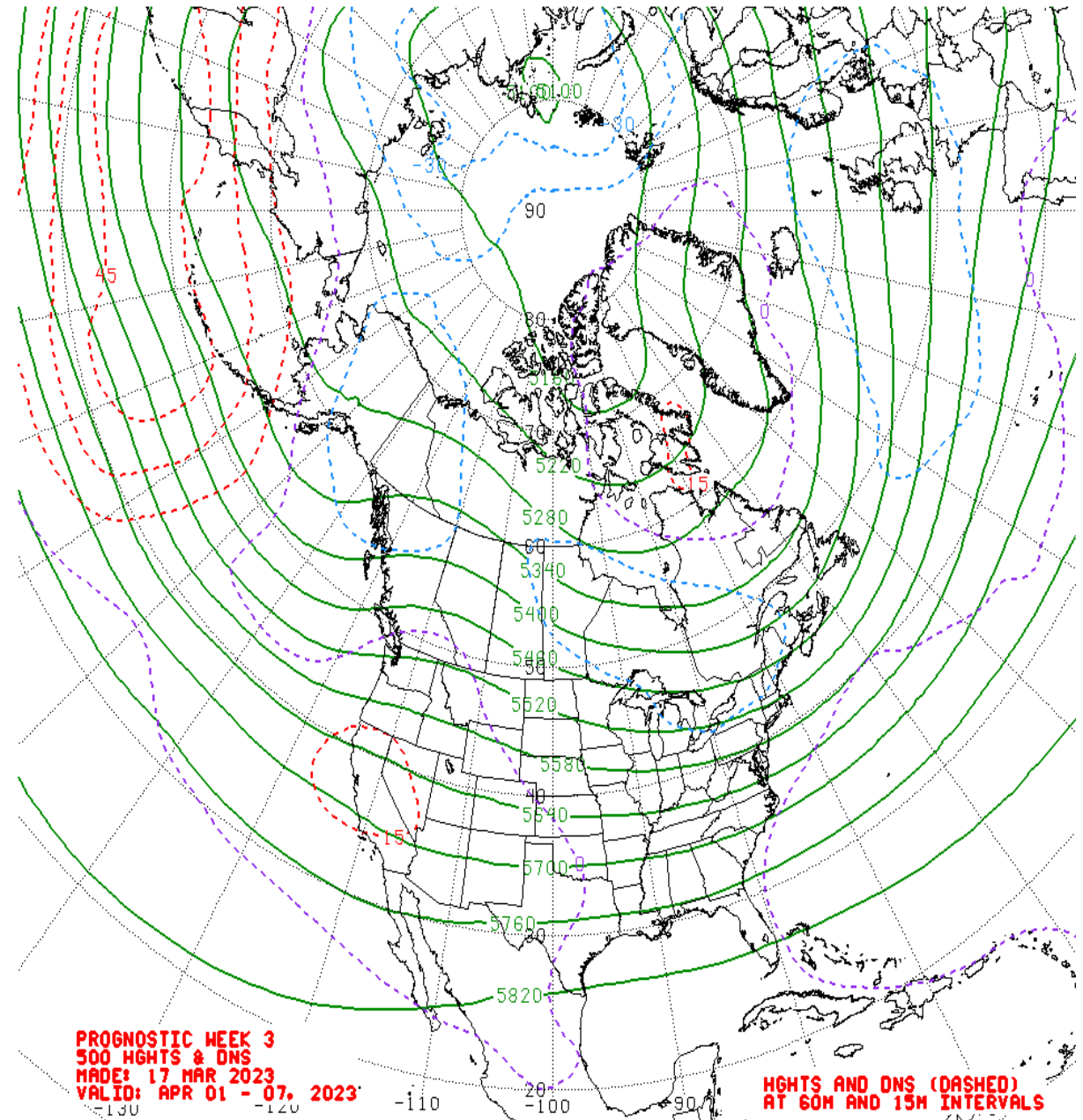
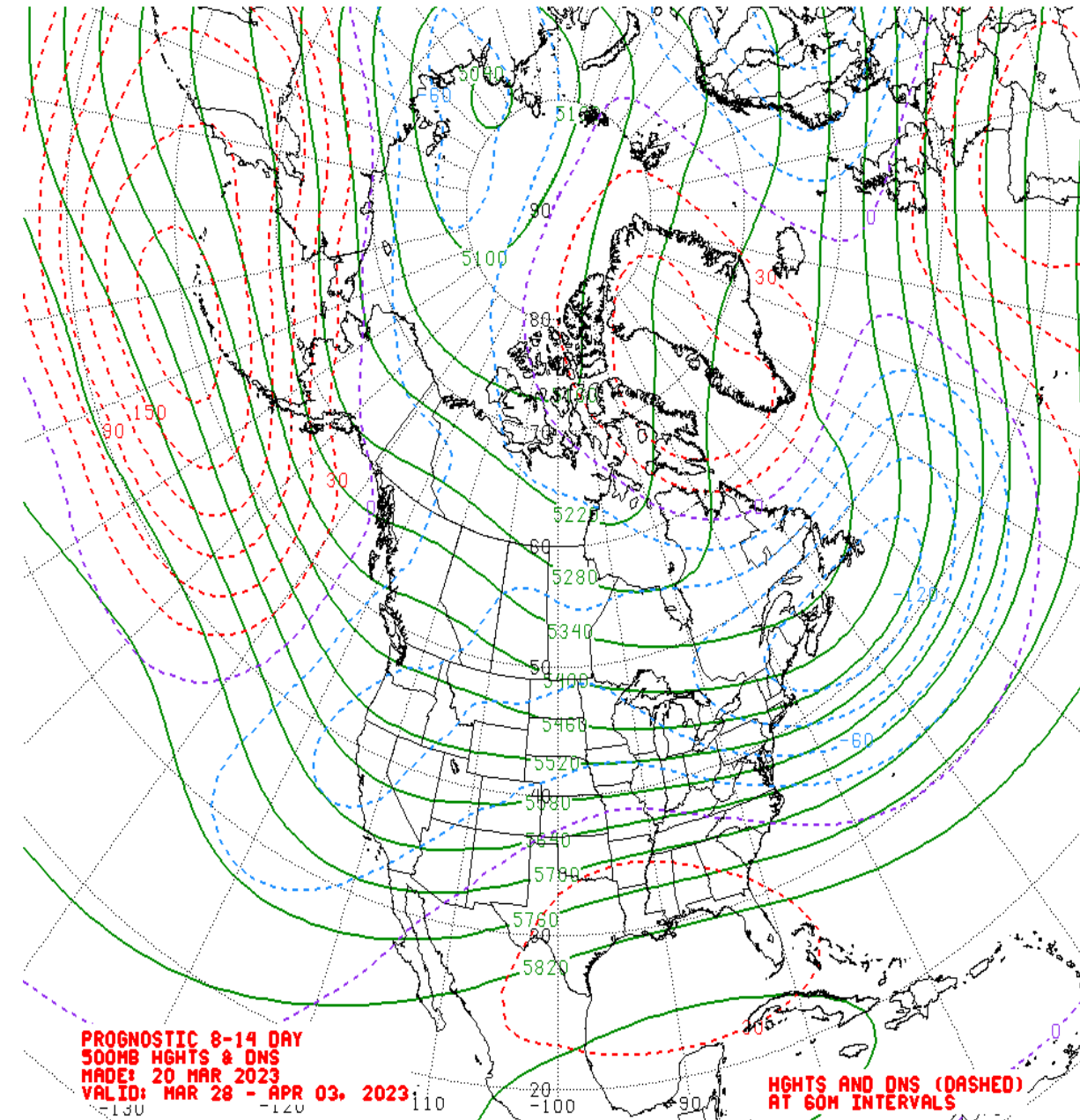
# Historical 500-hPa Height & U.S. Temperatures By MJO Phase:

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

FMA MJO Composite: GLBT (degC)

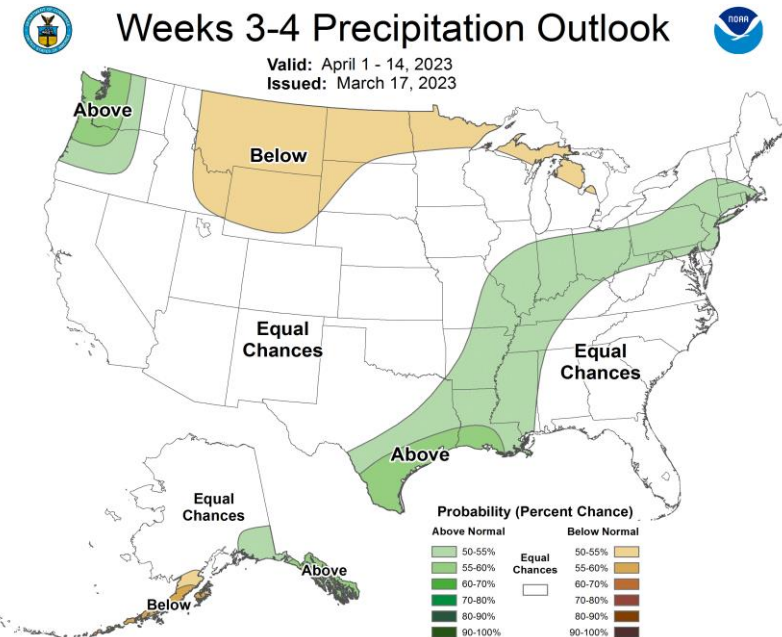
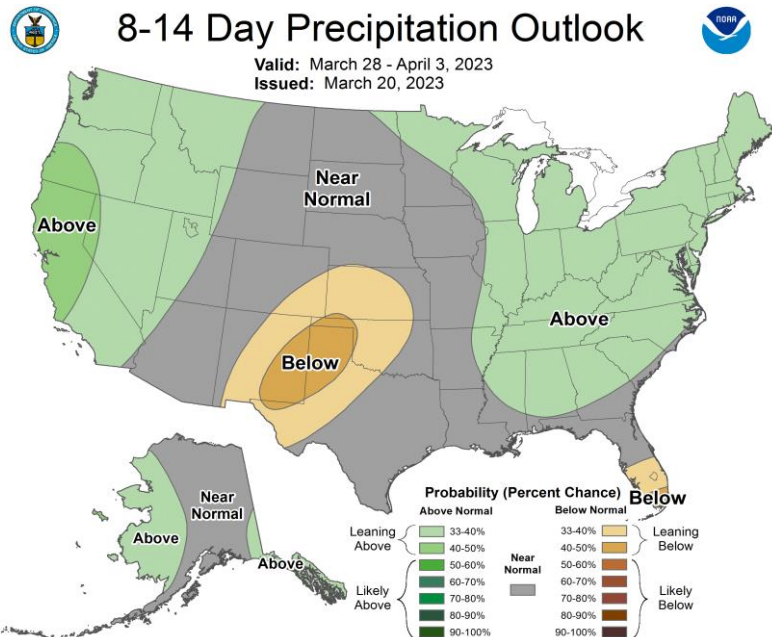
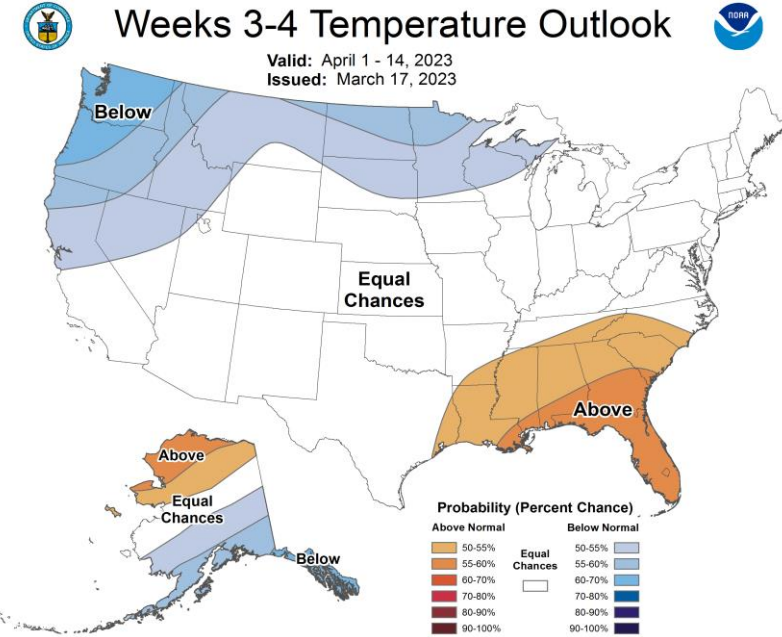
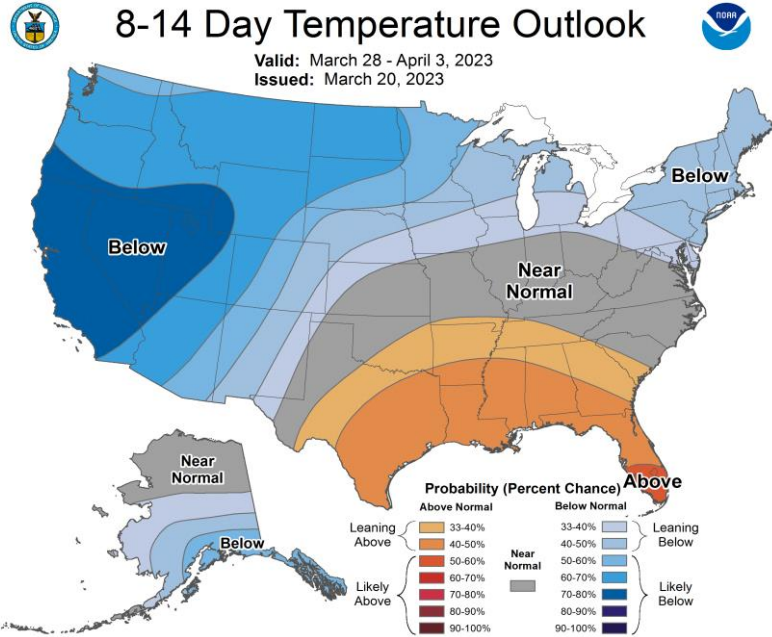


# Mean 500-hPa Height Anomaly Forecasts:





# Official Temperature & Precipitation Forecasts:



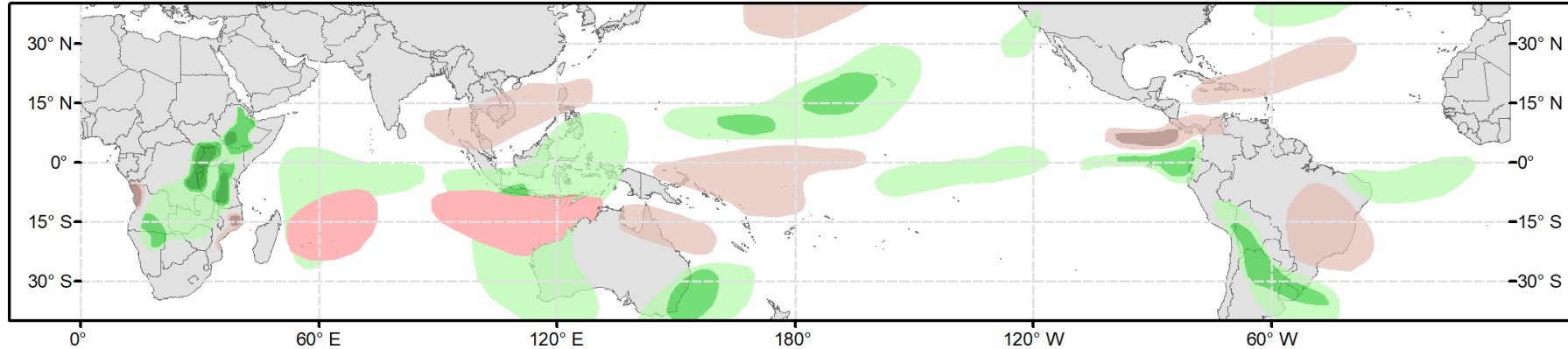


# Global Tropics Hazards Outlook

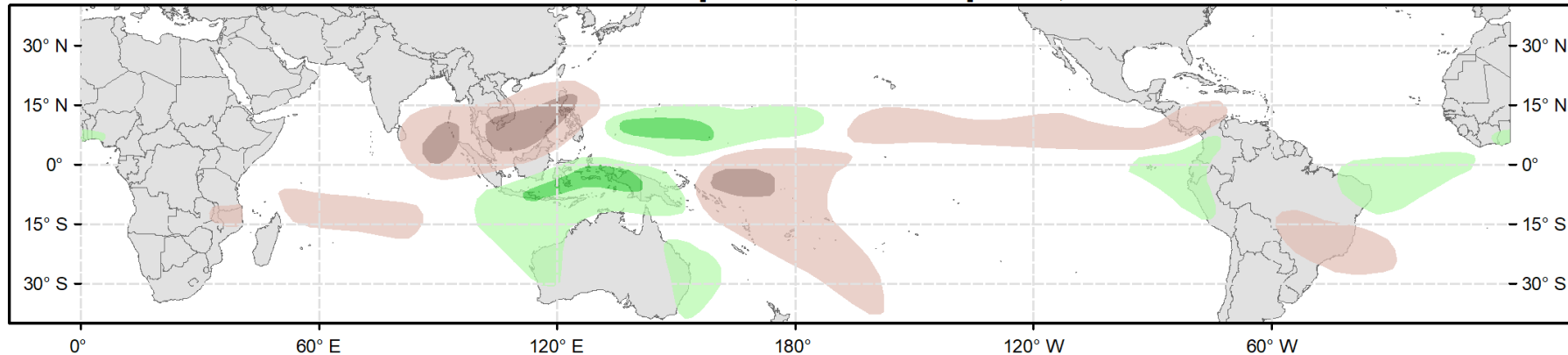
Climate Prediction Center



## Week 2 - Valid: Mar 29, 2023 - Apr 04, 2023



## Week 3 - Valid: Apr 05, 2023 - Apr 11, 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: 03/21/2023**  
**Forecaster: Novella**

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