



# Weeks 2-3 Global Tropics Hazards Outlook

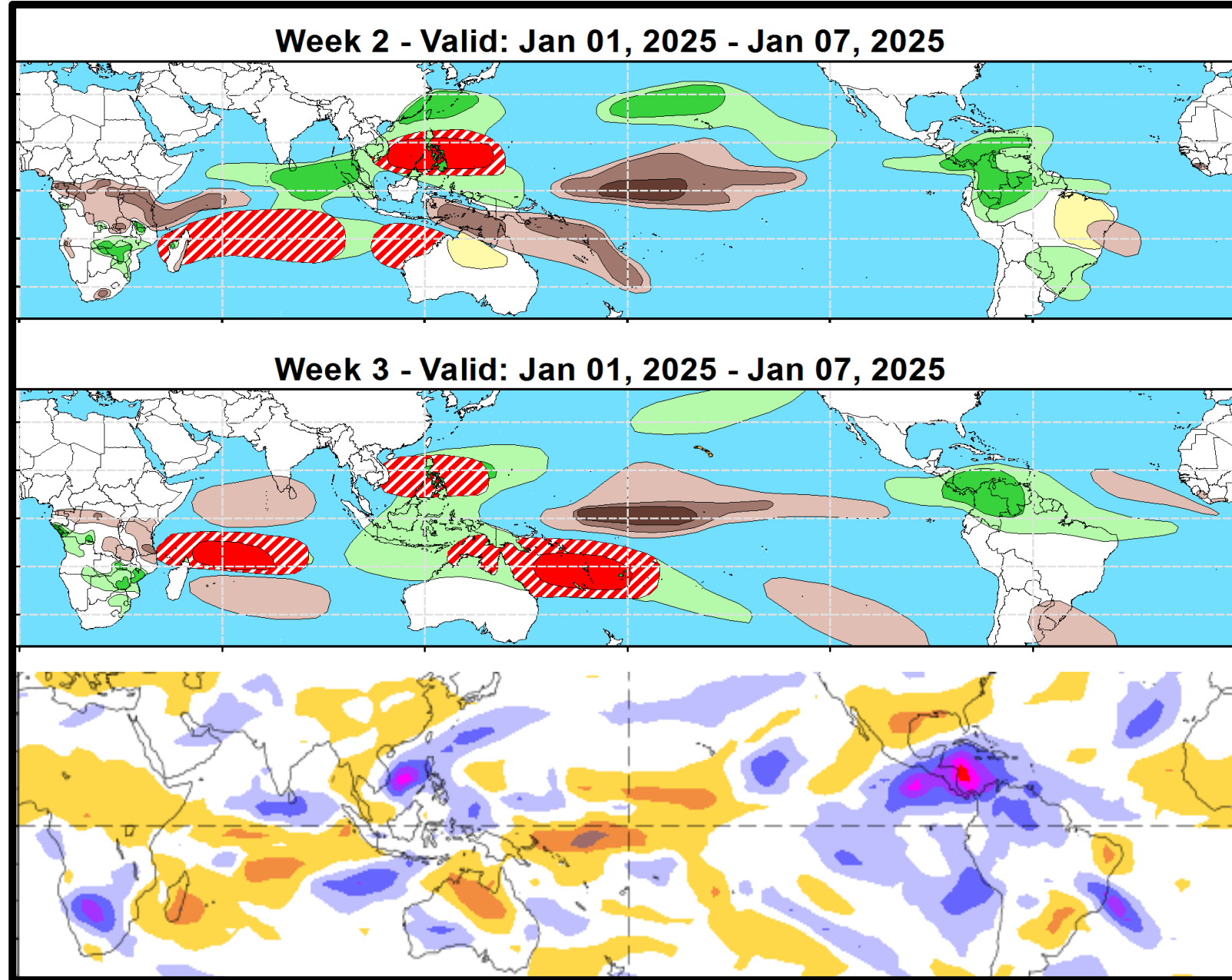
1/7/2025

Thomas Collow

NWS / NCEP / Climate Prediction Center

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

No new TCs formed during the past week.



# Synopsis of Climate Modes:

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**ENSO:** (Dec 12, 2024 Update)      *next update on Thursday, Jan 9<sup>th</sup>*

- ENSO Alert System Status: [La Niña Watch](#)
- La Niña conditions are most likely to emerge in November 2024 - January 2025 (59% chance), with a transition to ENSO-neutral most likely by March-May 2025 (61% chance).

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

- Following propagation into the Western Hemisphere, the RMM-based MJO index weakened into the unit circle during the past week.
- This weakening is forecast to be short lived as dynamical models indicate a resurgence of the MJO signal across the Indian Ocean as it constructively interferes with the low frequency convective signal tied to the emerging La Niña and the negative phase of the Indian Ocean Dipole (-IOD).
- The evolution of the MJO supports enhanced chances for tropical cyclone formation across the southern Indian Ocean, and extending along the north-coast of Australia.
- Although the latest CPC outlooks (8-14 day and week 3-4) favor persistent below-normal temperatures across the eastern U.S., lagged MJO composites support a warming trend toward the end of January or early February.

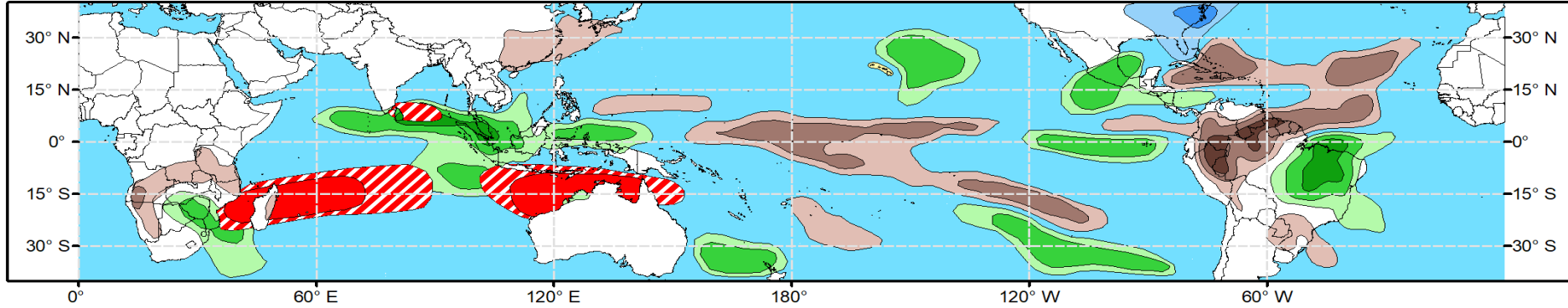
# GTH Outlook:



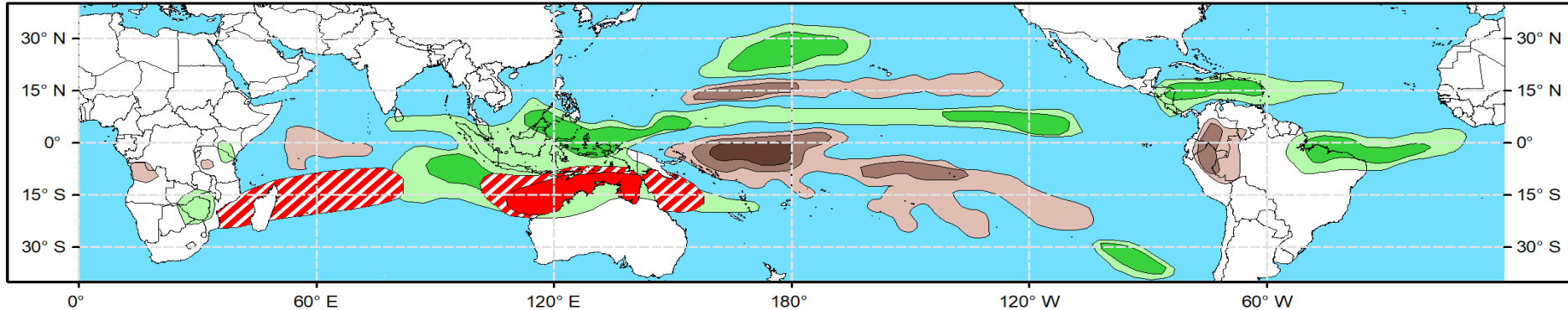
## Global Tropics Hazards Outlook Climate Prediction Center



**Week 2 - Valid: Jan 15, 2025 - Jan 21, 2025**



**Week 3 - Valid: Jan 22, 2025 - Jan 28, 2025**



**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%

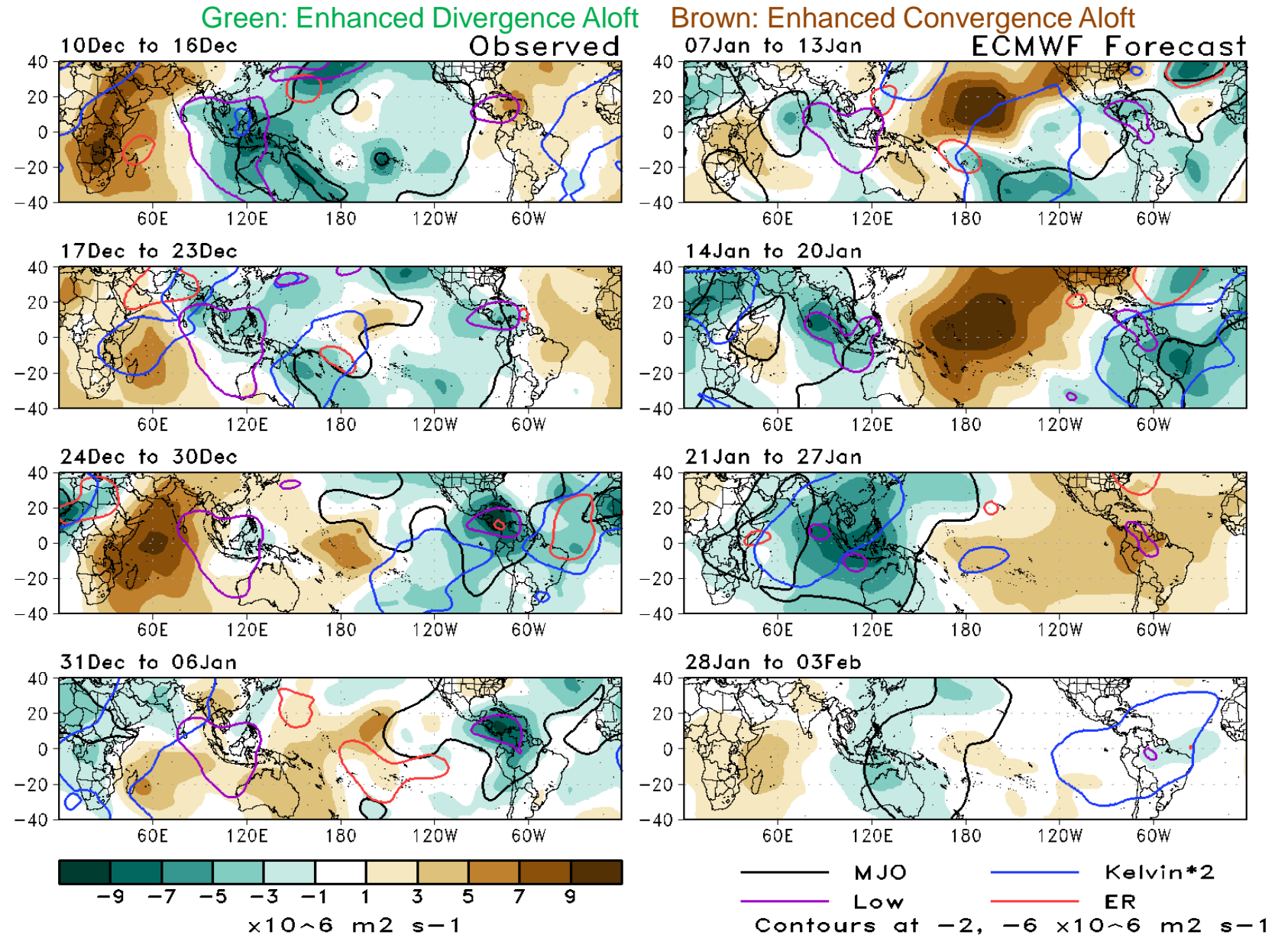
*7-day min temperatures in the  
Lower third of the historical range*

**Issued: 01/07/2025  
Forecaster: Collow**

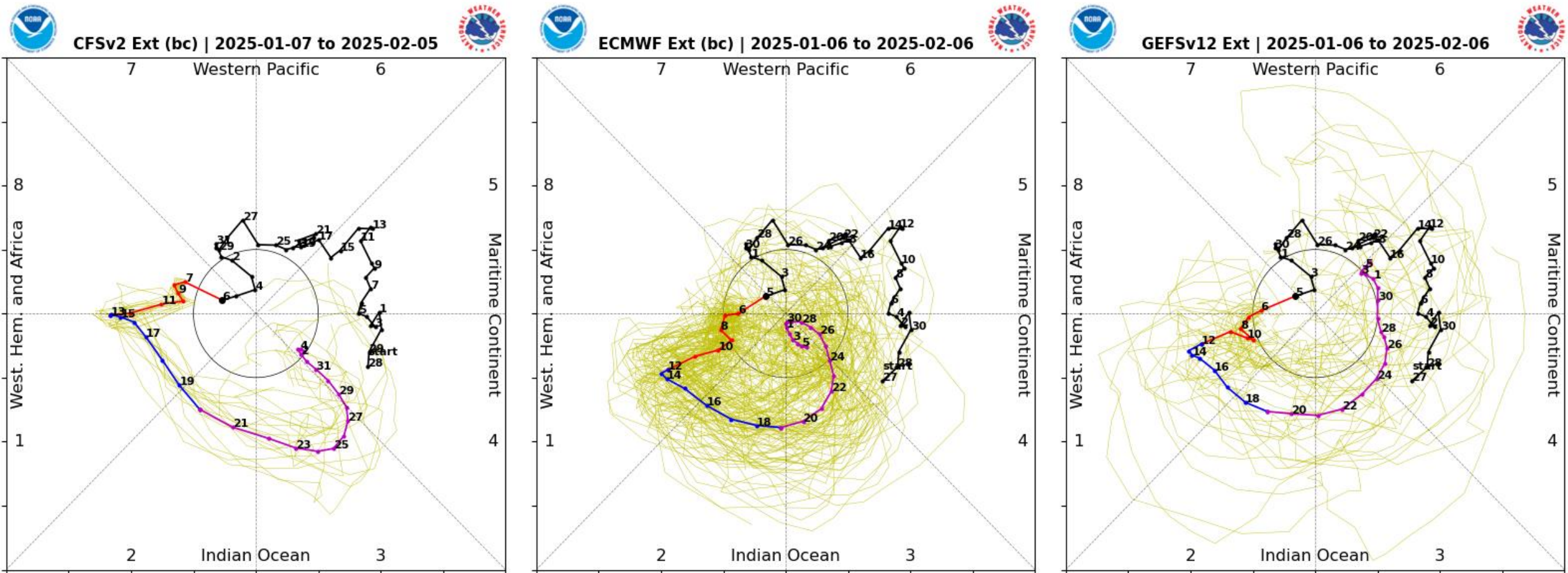
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# 200-hPa Velocity Potential Anomaly Maps:

- The upper-level velocity potential pattern has become more disorganized during the past week.
- Later in January, a wave-1 asymmetry pattern is predicted to redevelop as the **MJO** constructively interferes with the **low frequency** convective signal across the Indian Ocean.
- Enhanced convergence aloft (suppressed convection) is forecast to move across the Americas.

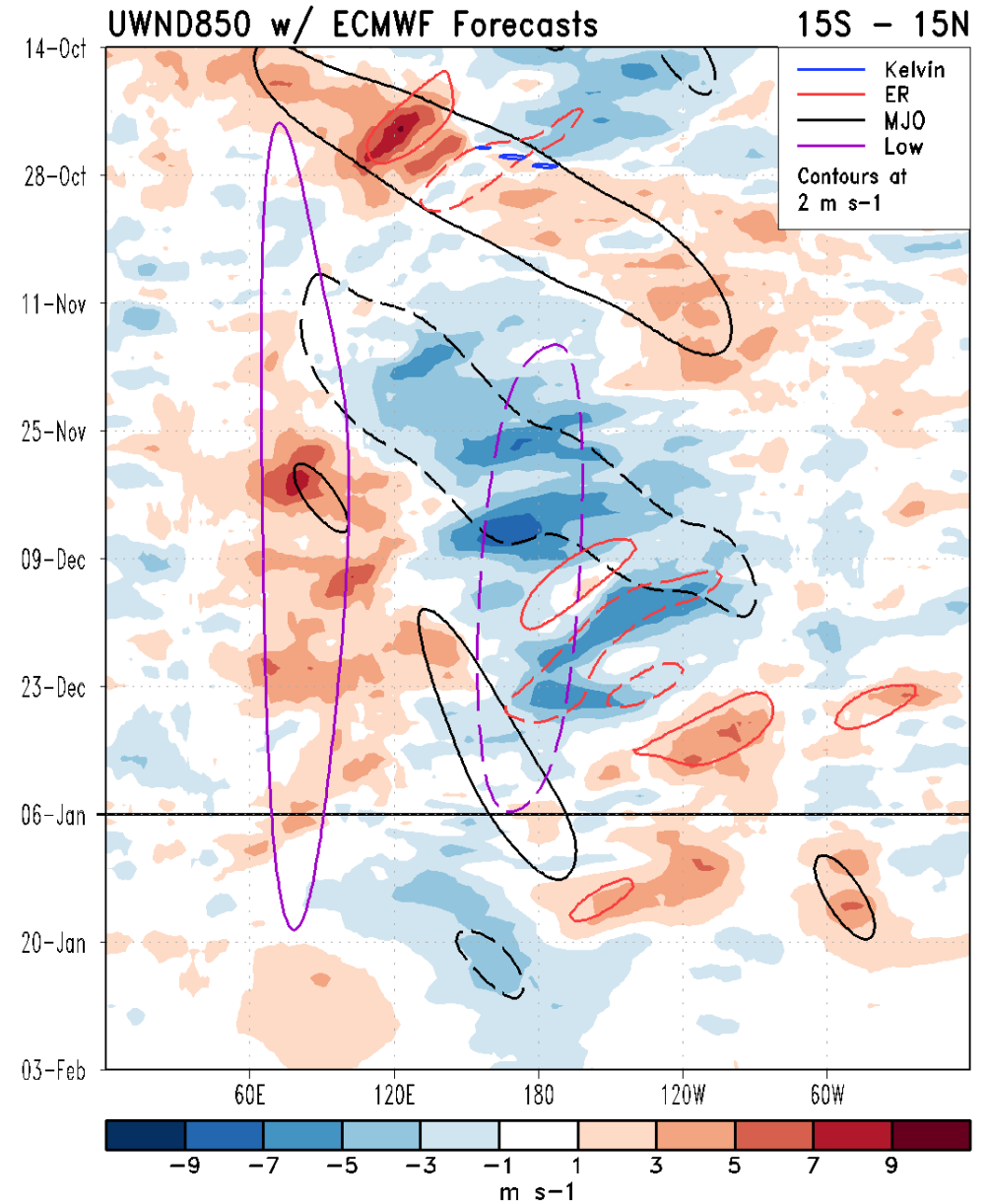
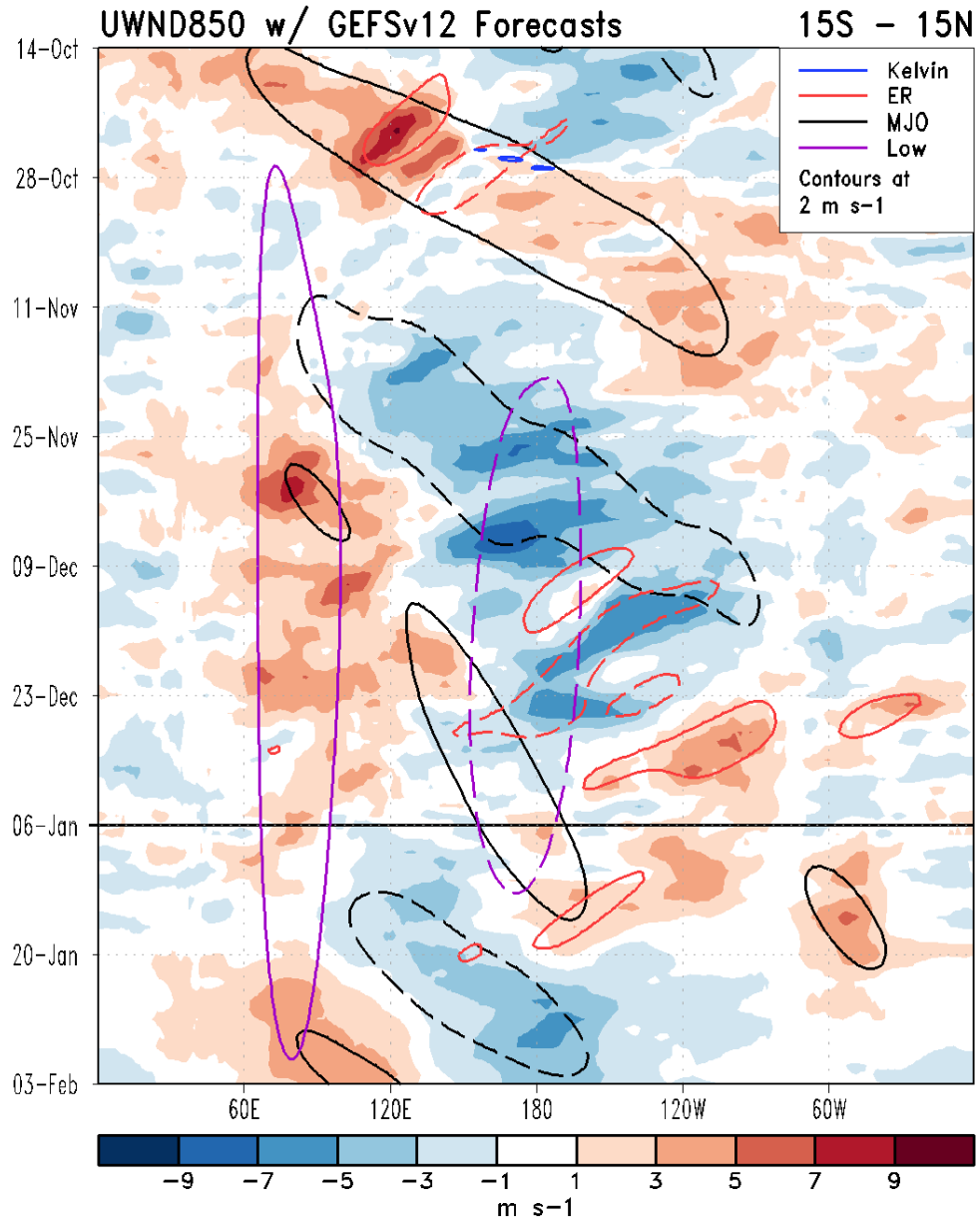


# RMM Index Observations & Forecasts:



- Forecasts from the CFS, ECMWF, and GEFS ensembles all support a strengthening MJO signal across the Indian Ocean during week-2.
- Beyond week-2, uncertainty increases with the MJO potentially destructively interfering with the developing La Niña signal over the Western Pacific. The CFS and ECMWF indicate the MJO weakening back into the unit circle, while the GEFS continues propagation into the Western Pacific.

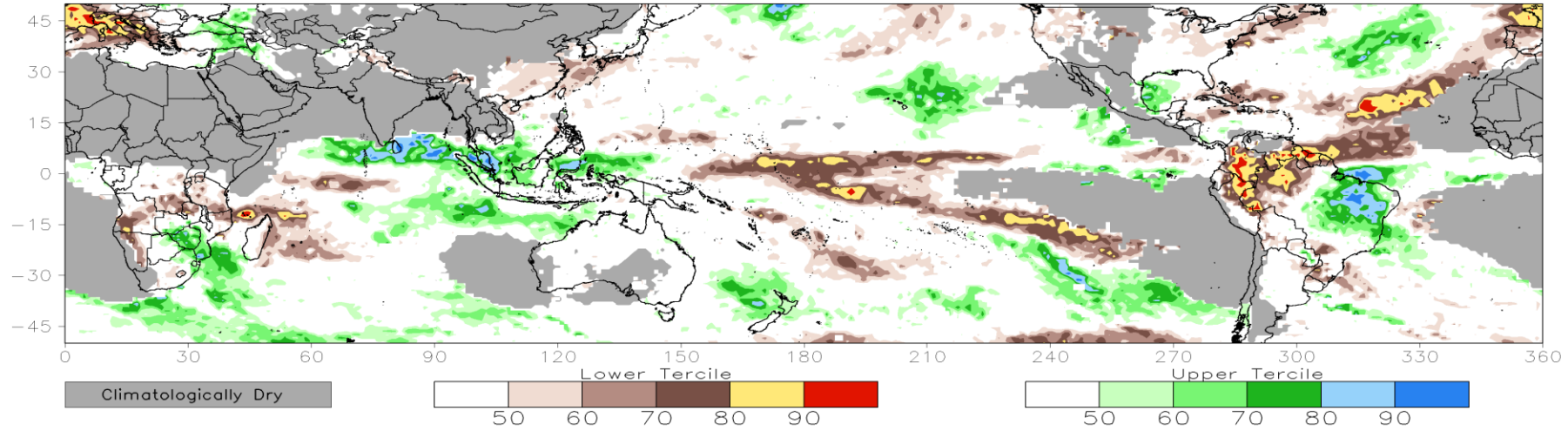
# Lower-Level Zonal Wind Anomaly Time/Lon Plots:



# Consolidated Probabilistic Precipitation: Weeks 2 & 3

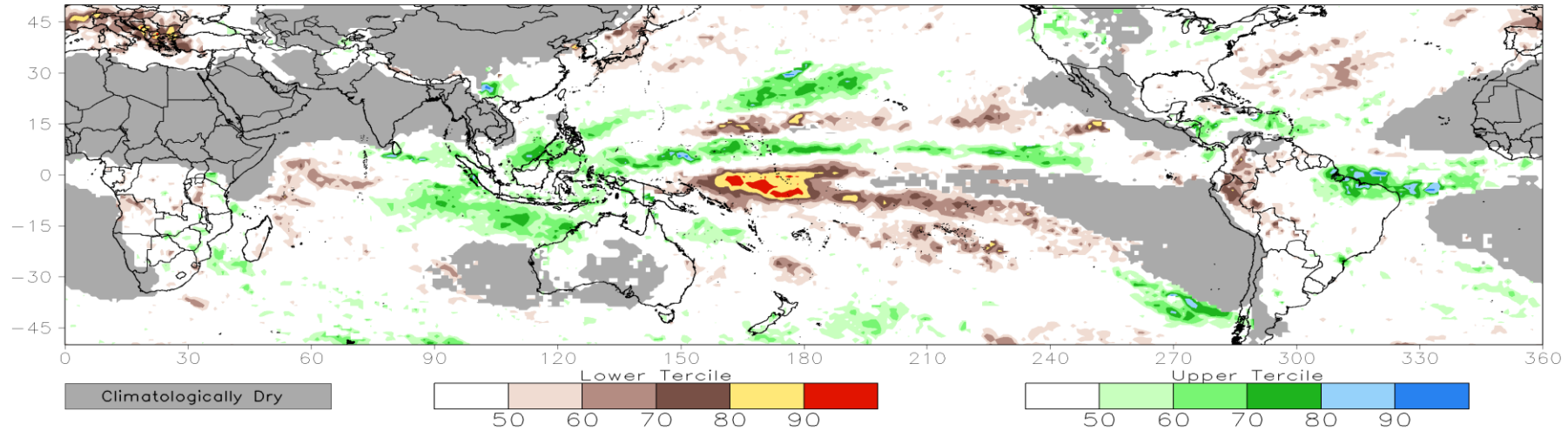
CONS 00z: Week2 Probability for Total Rainfall Below(Above) Lower(Upper) Tercile (%)

Valid: 15Jan2025–21Jan2025



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

Valid: 22Jan2025–28Jan2025

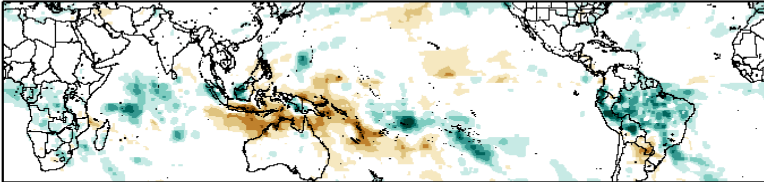




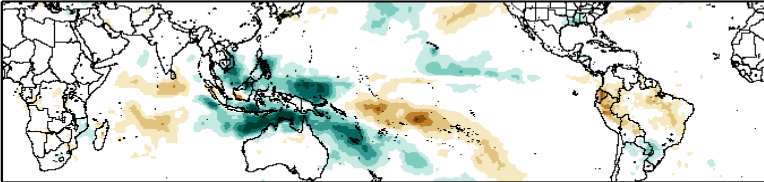
# Historical Precipitation Anomalies By MJO Phase and ENSO composite:

DJF MJO Composite: GPCP1DD (mm/day)

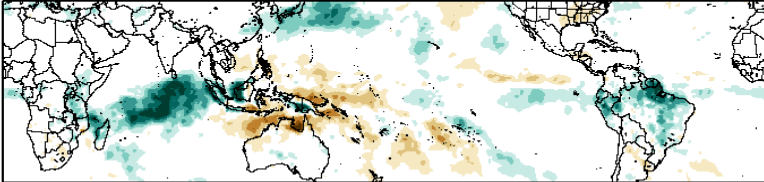
Phase 1



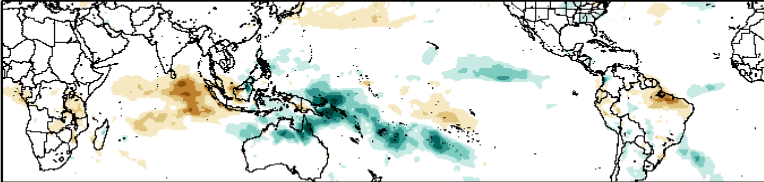
Phase 5



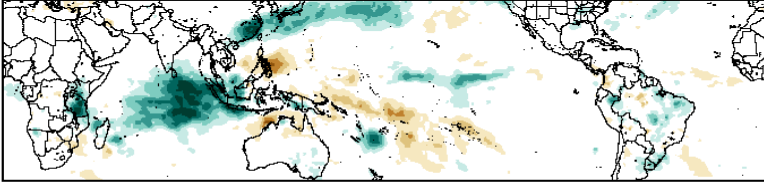
Phase 2



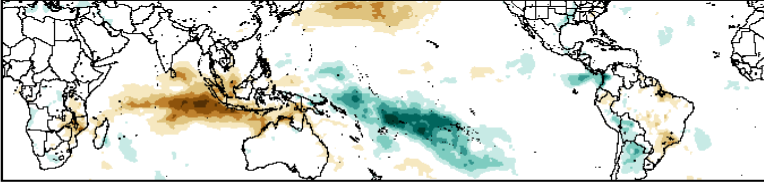
Phase 6



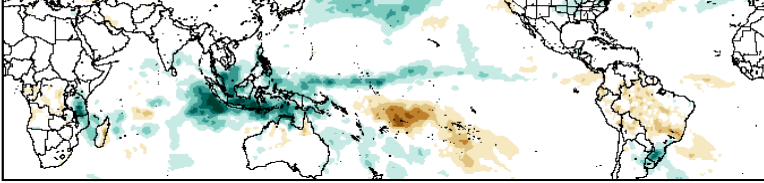
Phase 3



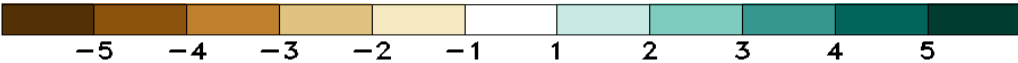
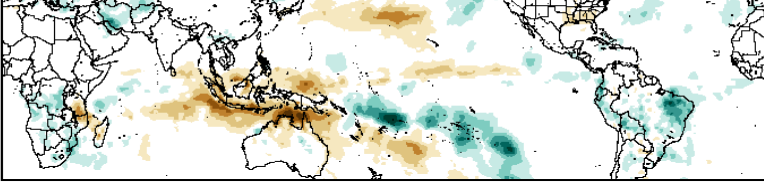
Phase 7



Phase 4

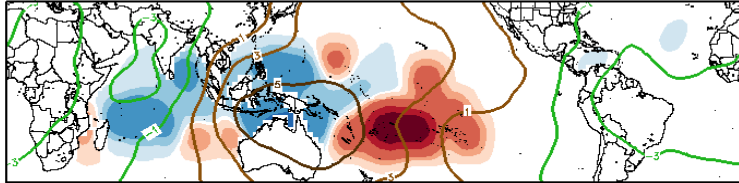


Phase 8

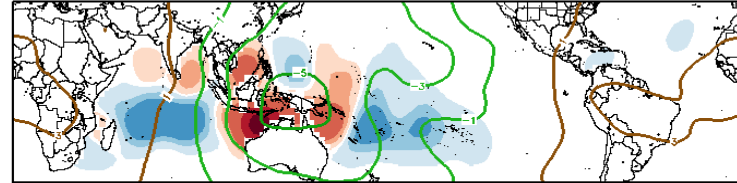


# Historical TC Origin Anomalies By MJO Phase & Weeks 2+3 Genesis Climo:

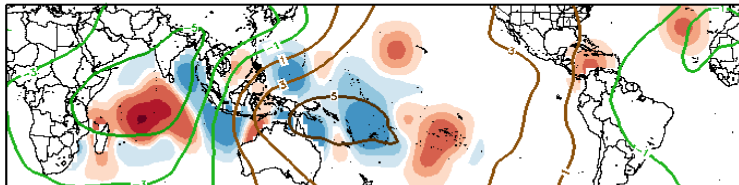
DJF MJO Composite: Mean TC Origin Density Anomaly ( $\#TCs/277km^2 \cdot 100$ )  
w/ DJF CHI200 ( $\times 10^6 m^2 s^{-1}$ ) / Contours every  $2 \times 10^6 m^2 s^{-1}$



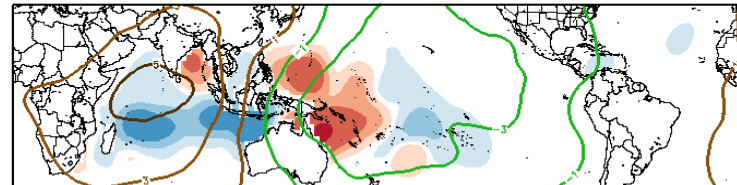
Phase 1



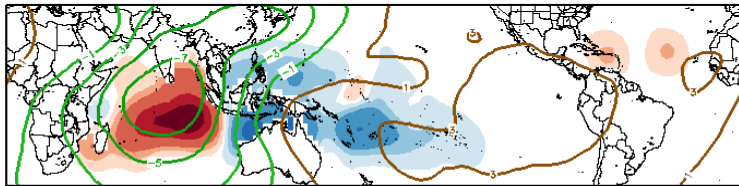
Phase 5



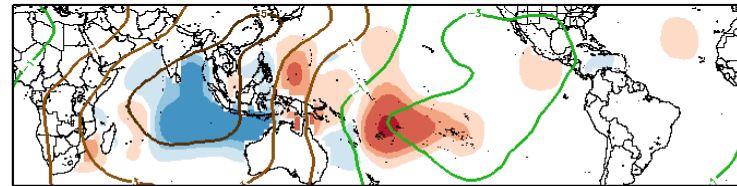
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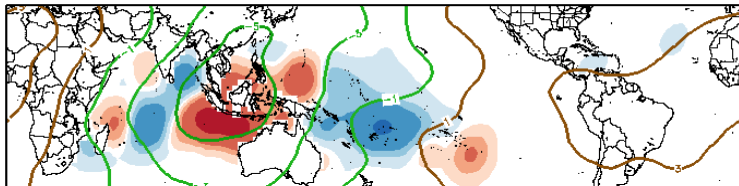
Phase 6



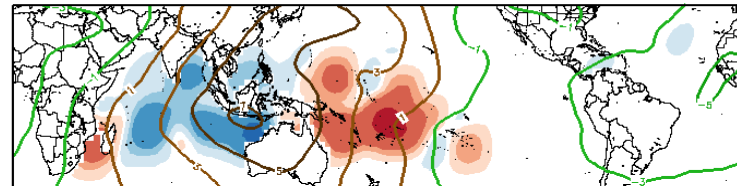
Phase 3



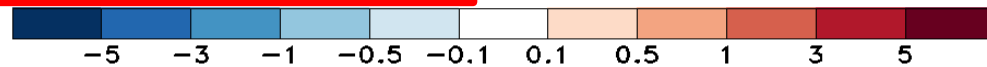
Phase 7



Phase 4



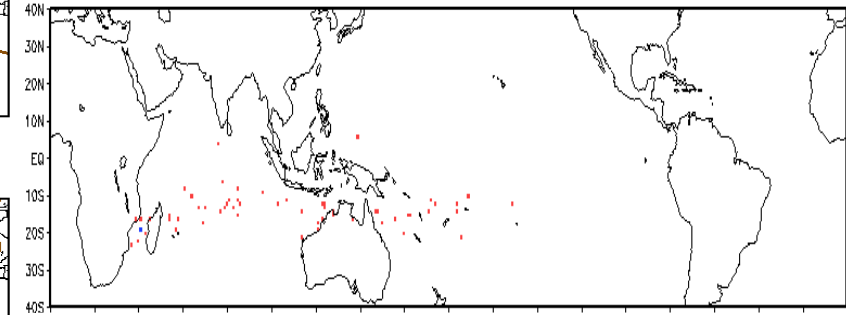
Phase 8



\*Experimental\*

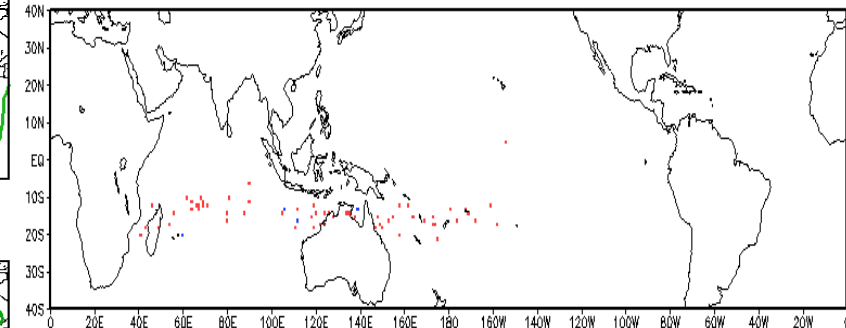
Observed TC Genesis, 1979–2021

7-day Period 0115 to 0121



Observed TC Genesis, 1979–2021

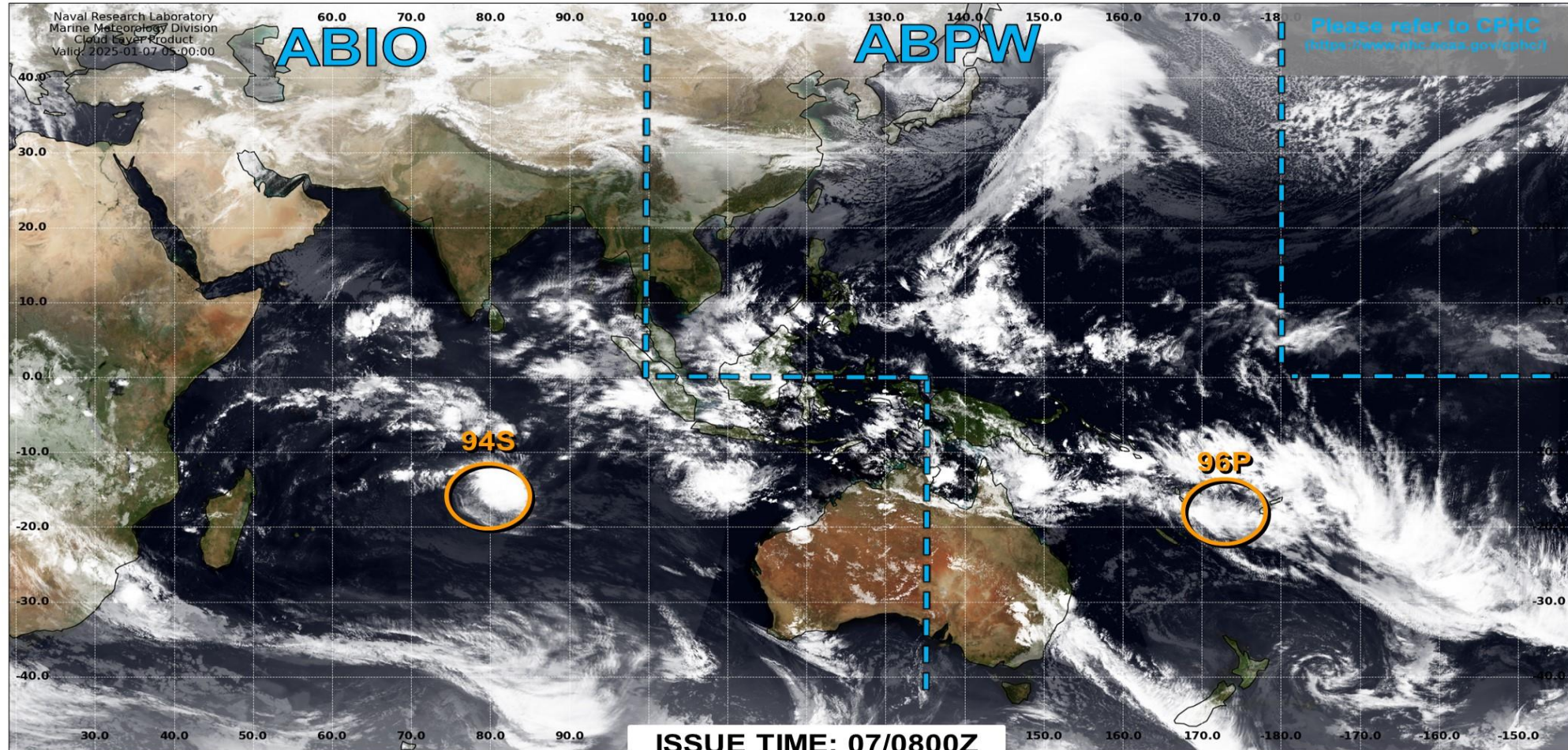
7-day Period 0122 to 0128



# 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)



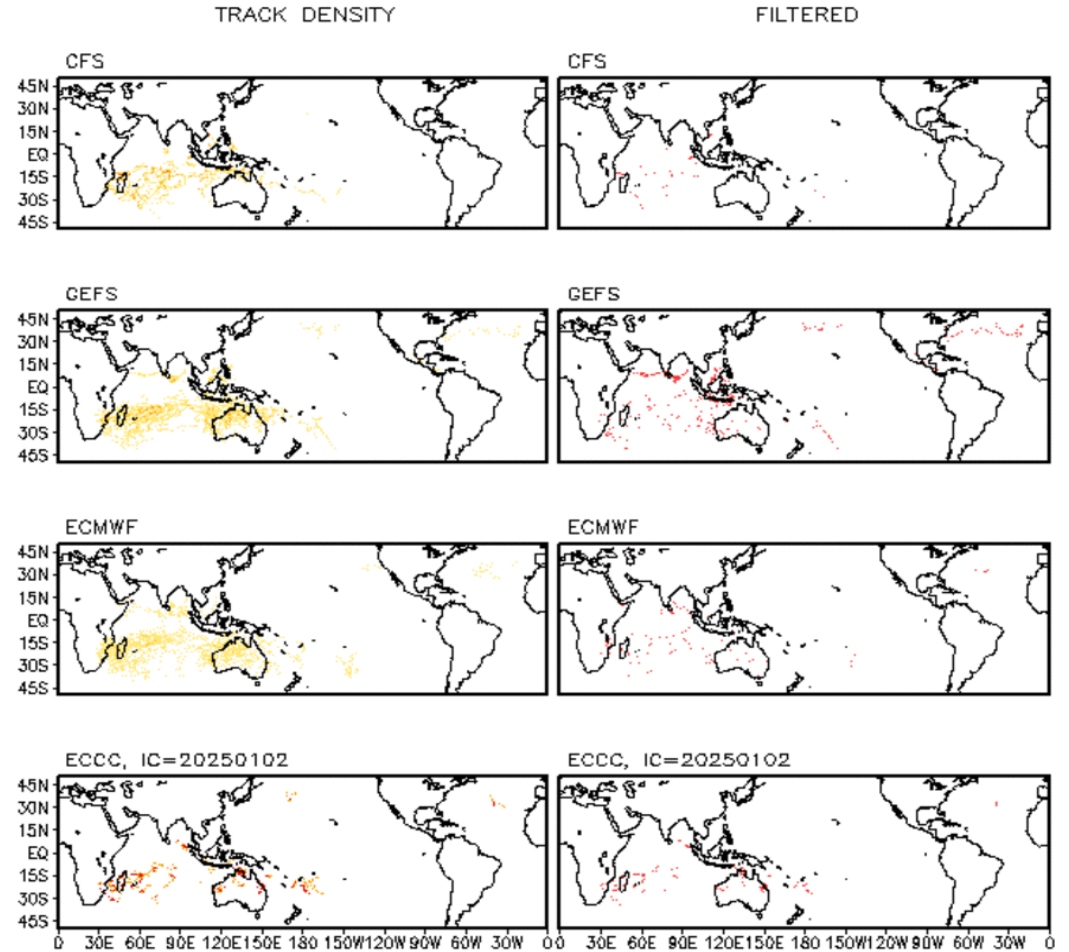
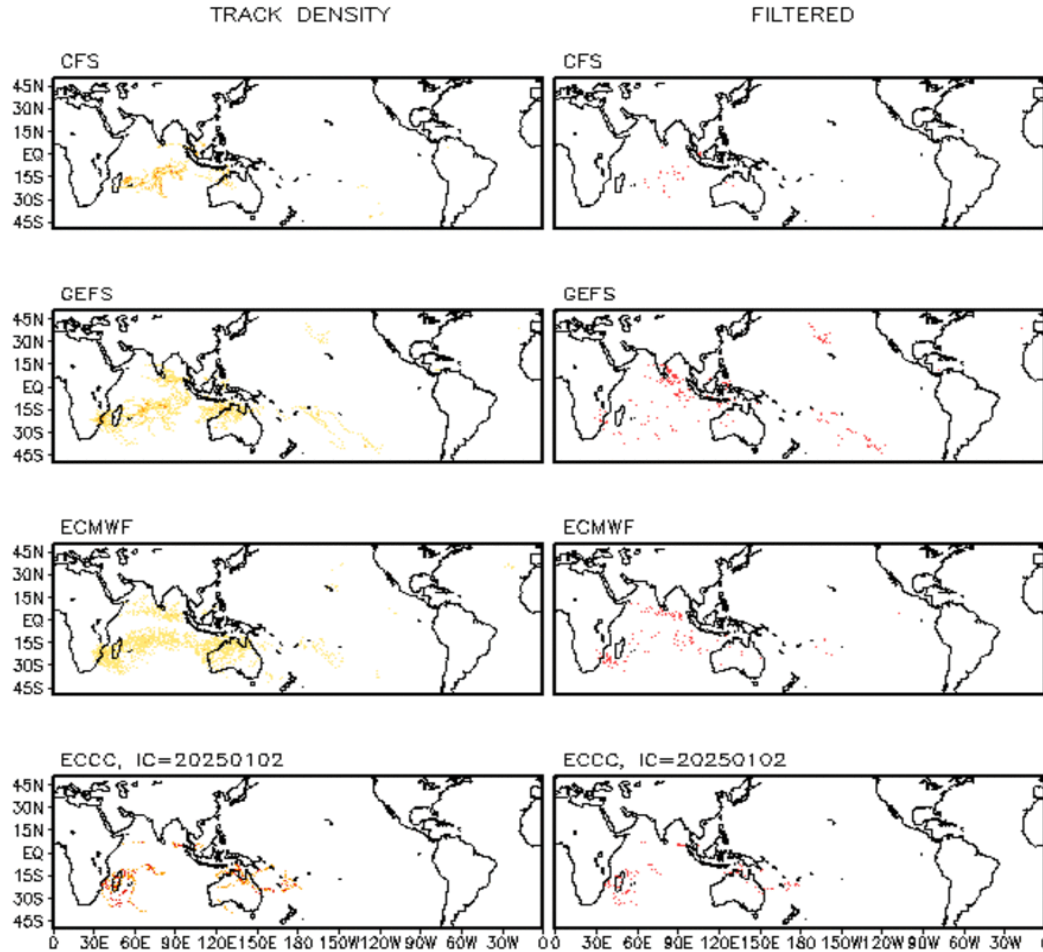
Monitoring for potential transition to TC. Invest label color denotes tropical transition probability

Tropical Cyclone (Reference Warning)

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

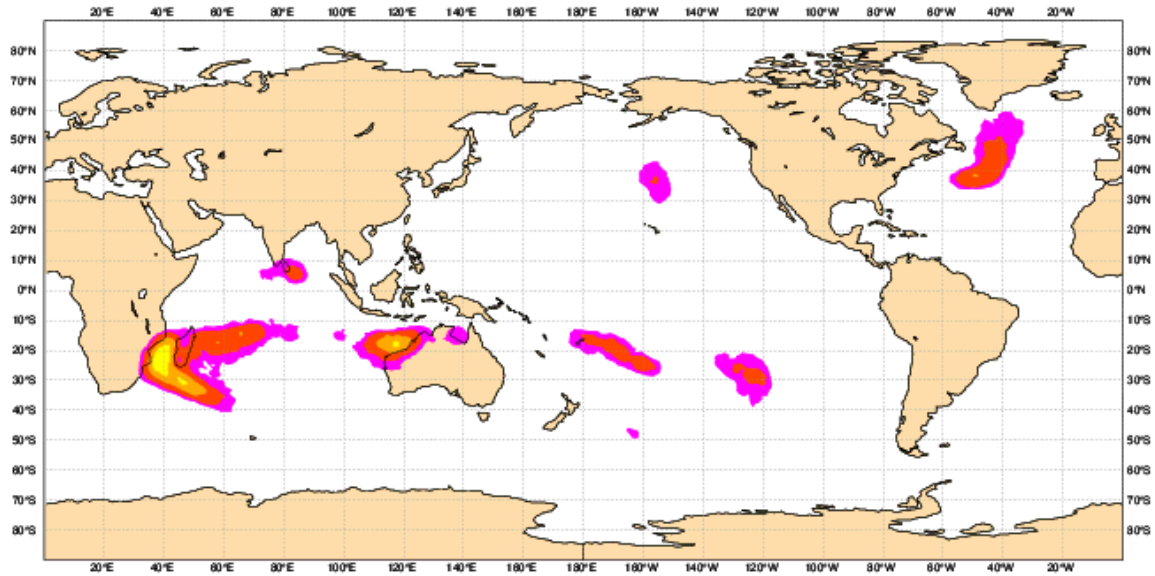
Storm Track Density Distribution, IC=20250106  
Week 2 Forecast: 0115-0121

Storm Track Density Distribution, IC=20250106  
Week 3 Forecast: 0122-0128



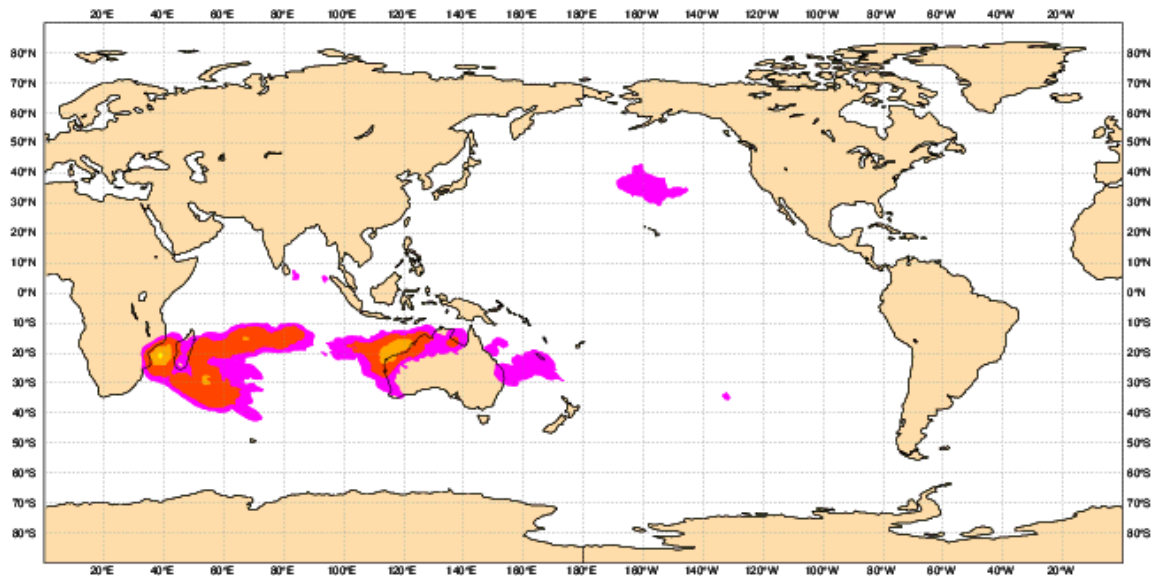
Weekly mean Tropical Storm Strike Probability. Date: 20250106 0 UTC t+(168-336)  
Probability of a TS passing within 300km radius

5-10 10-20 20-30 30-40 40-50 50-60 60-70 70-80 80-90 90-110



Weekly mean Tropical Storm Strike Probability. Date: 20250106 0 UTC t+(336-504)  
Probability of a TS passing within 300km radius

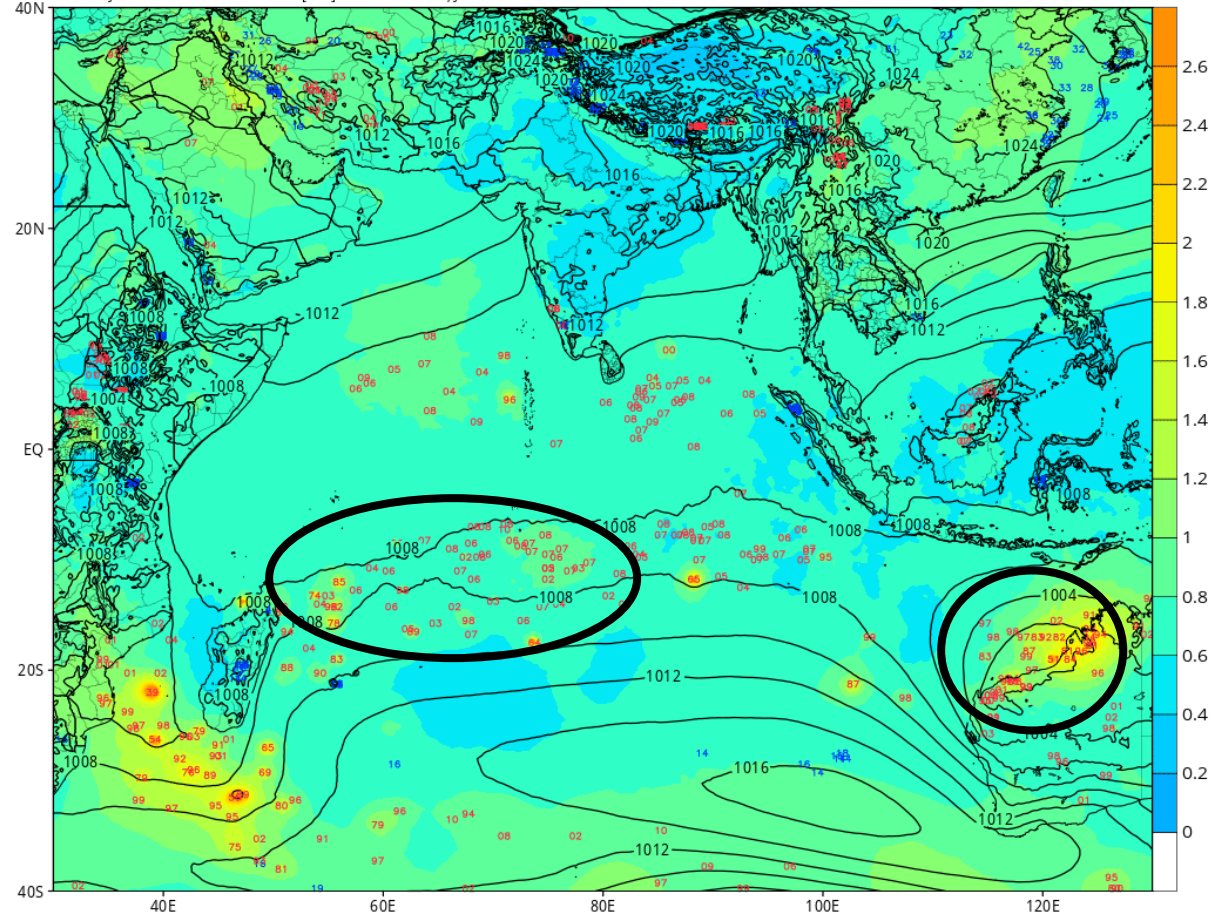
5-10 10-20 20-30 30-40 40-50 50-60 60-70 70-80 80-90 90-110



EPS Mean MSLP (mb), Ensemble Member Pressure Centers (Lows: red | Highs: blue), & Normalized Spread ( $\sigma$ )

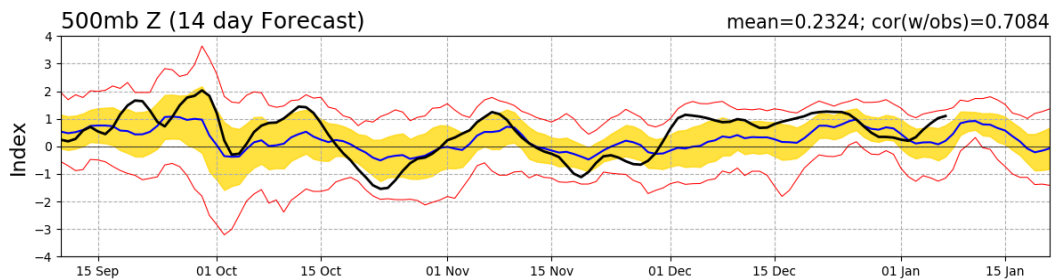
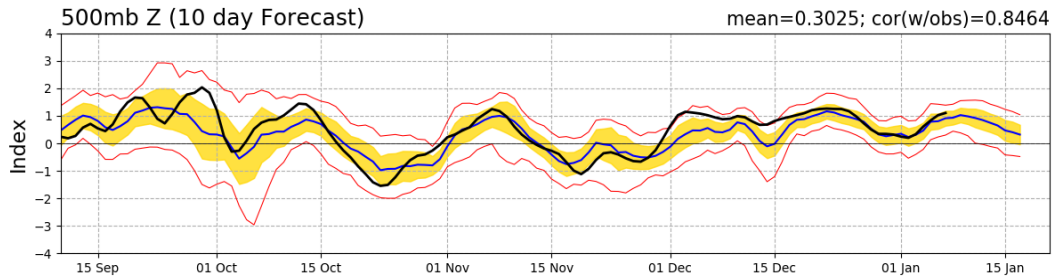
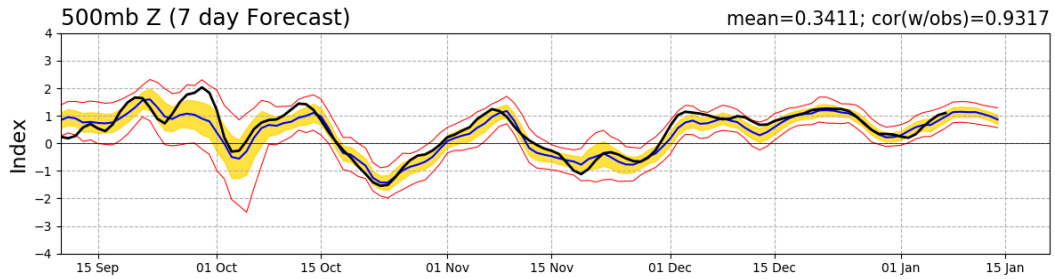
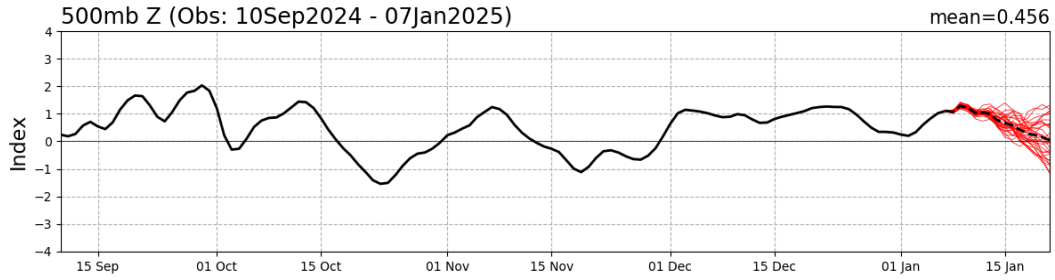
Init: 00z Jan 07 2025 Forecast Hour: [276] valid at 12z Sat, Jan 18 2025

TROPICALTIDBITS.COM

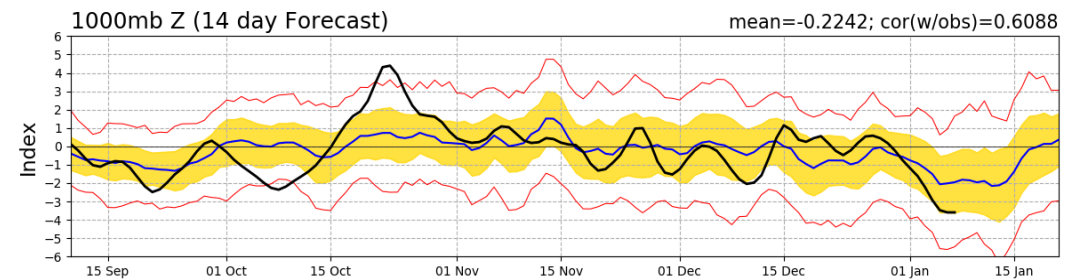
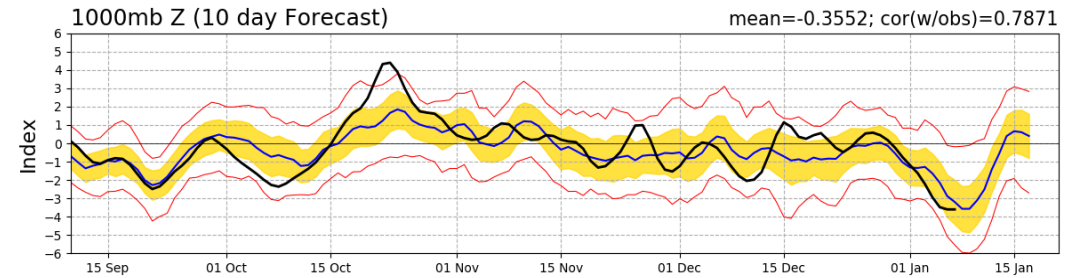
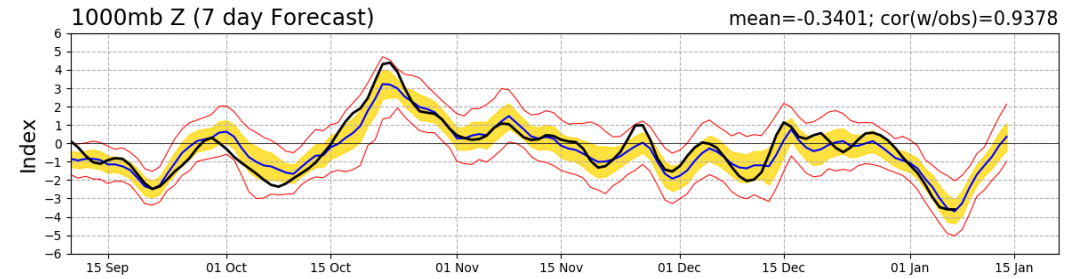
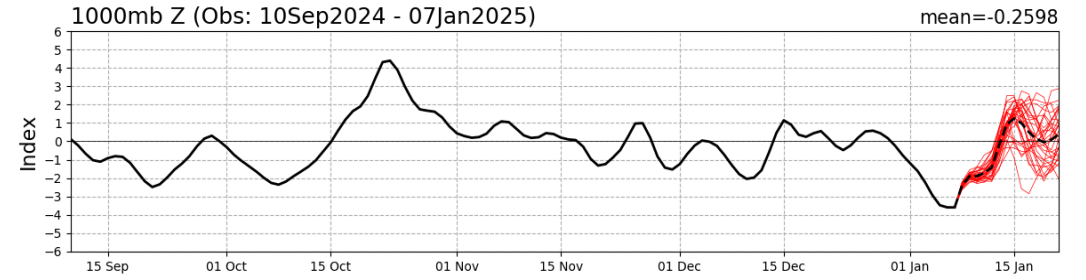


# Teleconnection Indices: NAO / AO:

## PNA Index: Observed & GEFS Forecasts



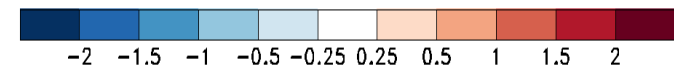
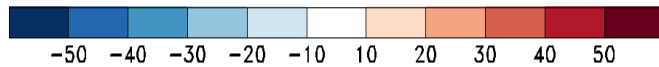
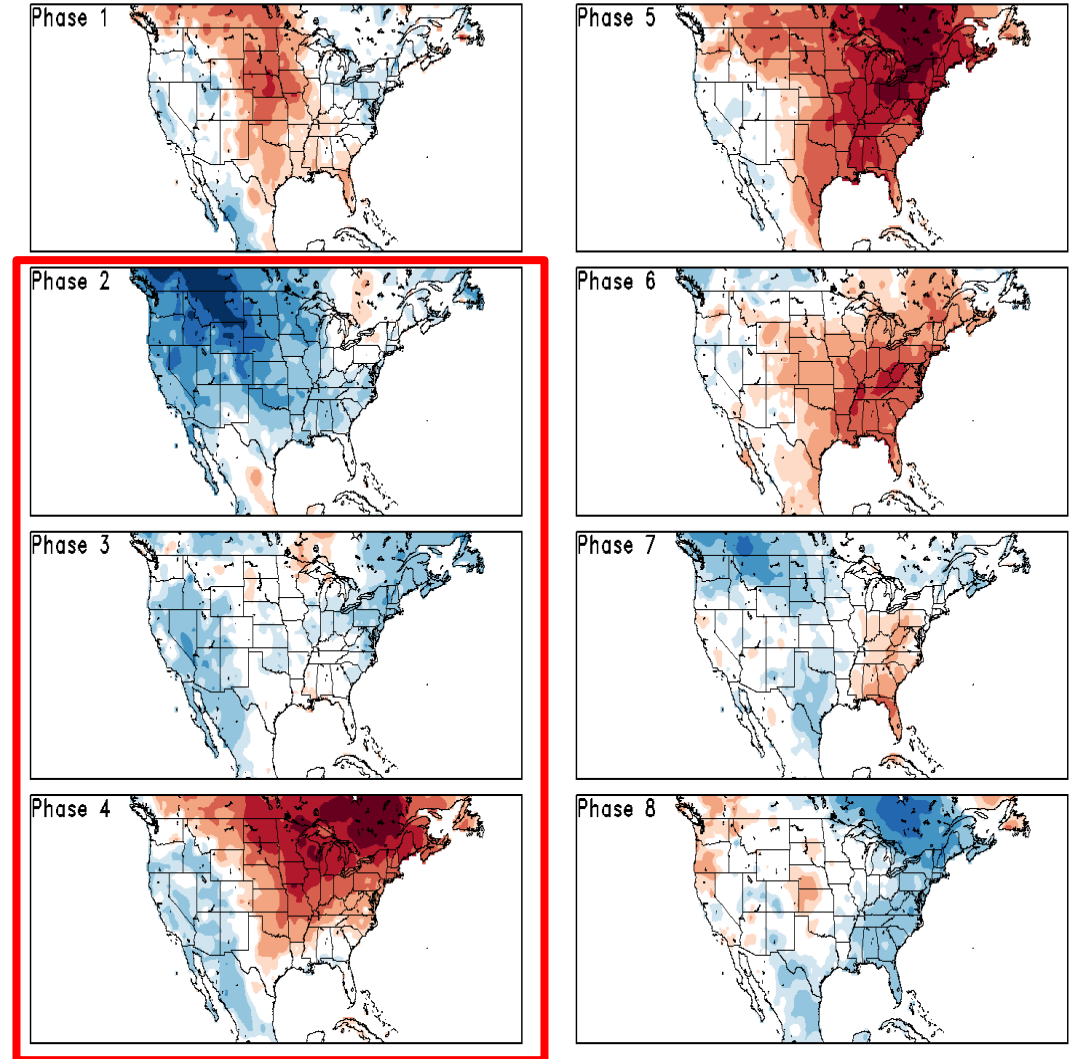
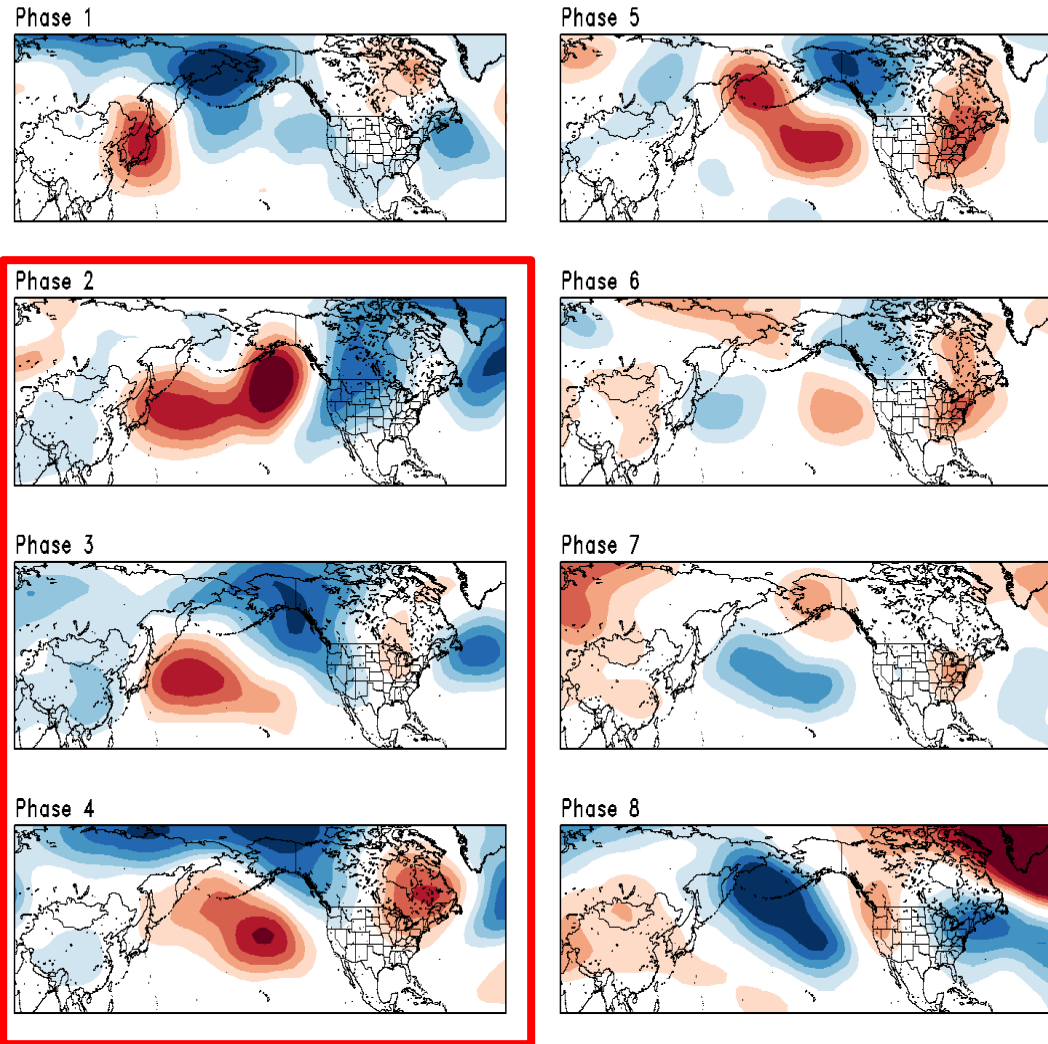
## AO Index: Observed & GEFS Forecasts



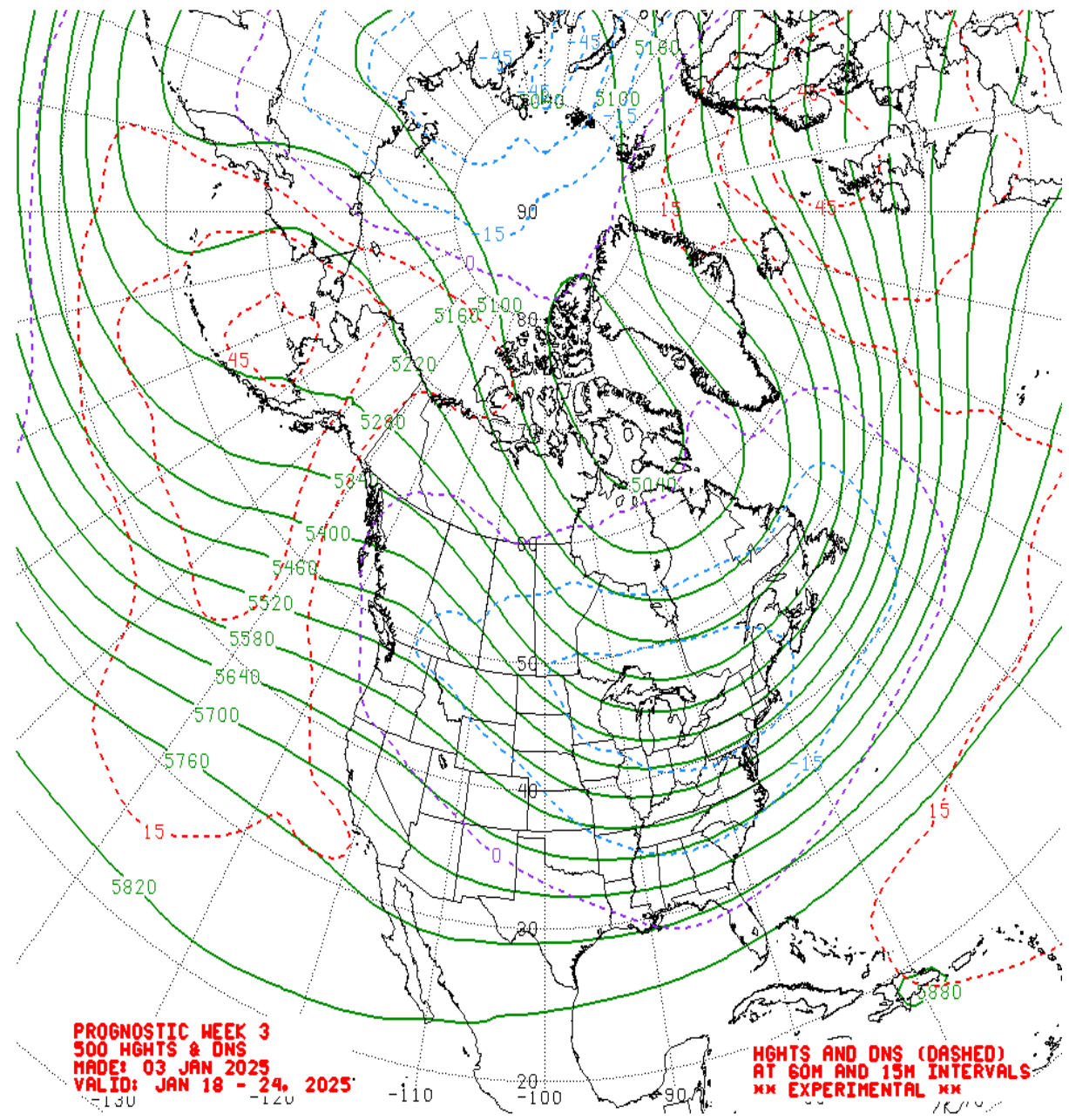
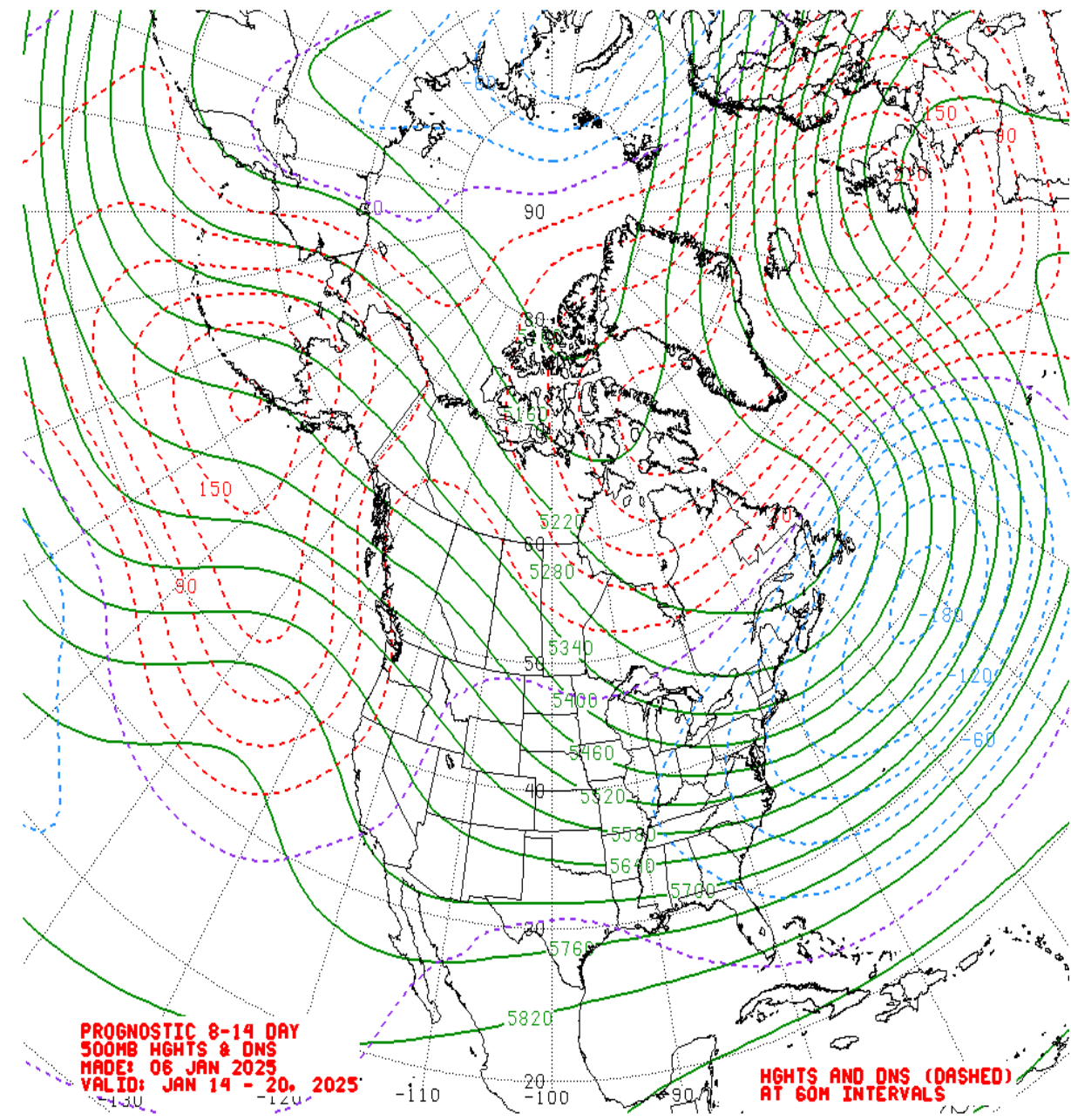
# Historical 500-hPa Height & U.S. Temperatures By MJO Phase:

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

DJF MJO Composite: GLBT (degC)

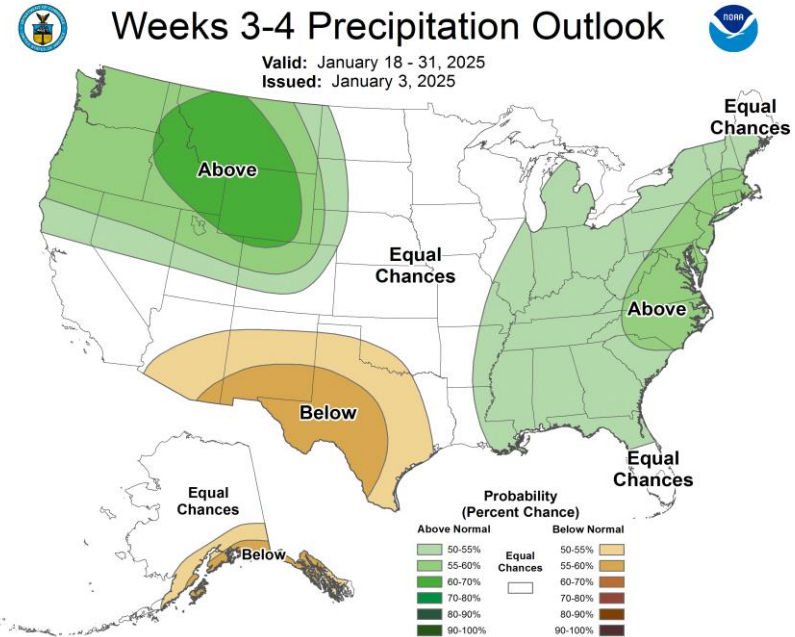
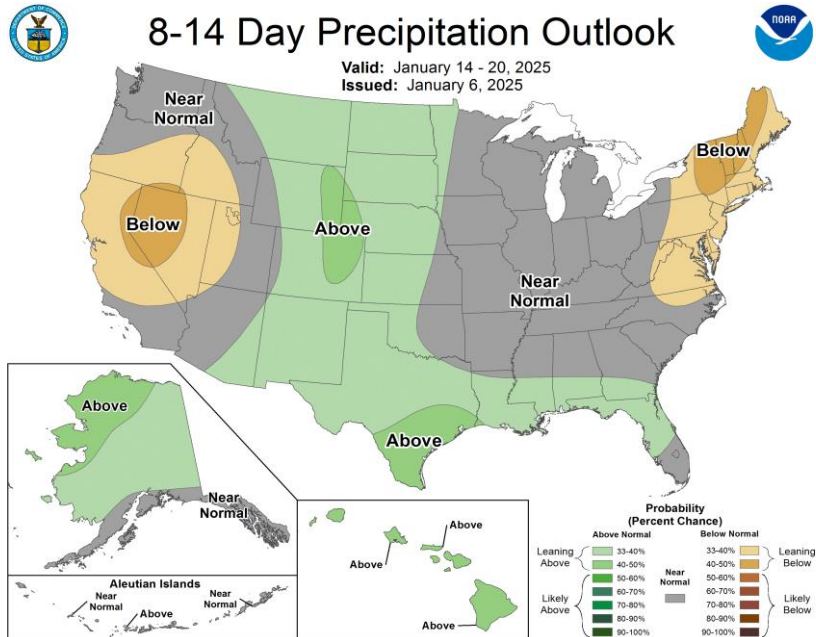
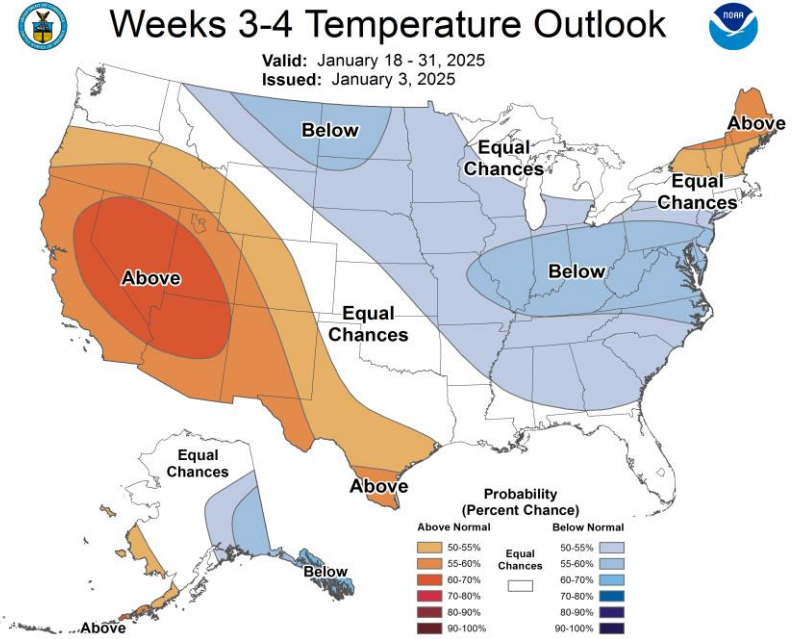
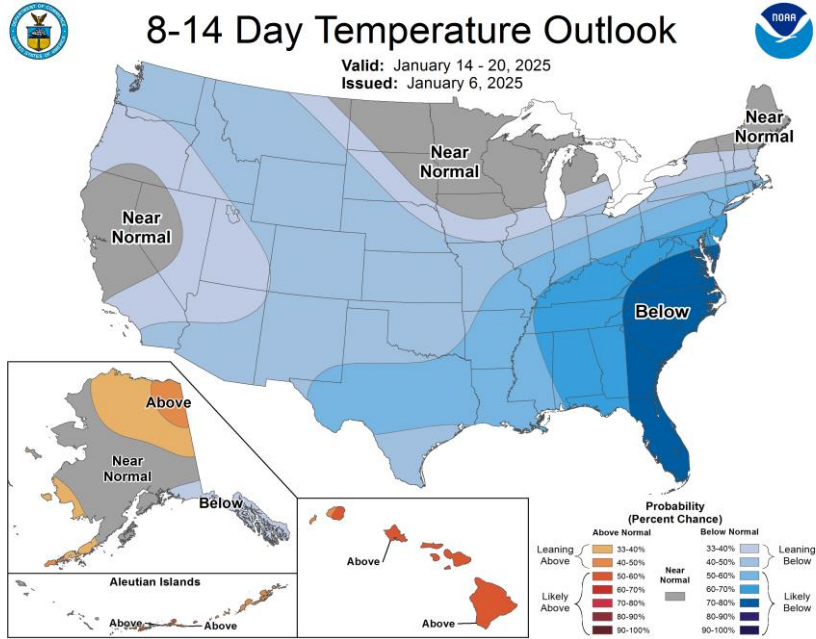


# Mean 500-hPa Height Anomaly Forecasts: Weeks 2+3





# Official Temperature & Precipitation Forecasts:



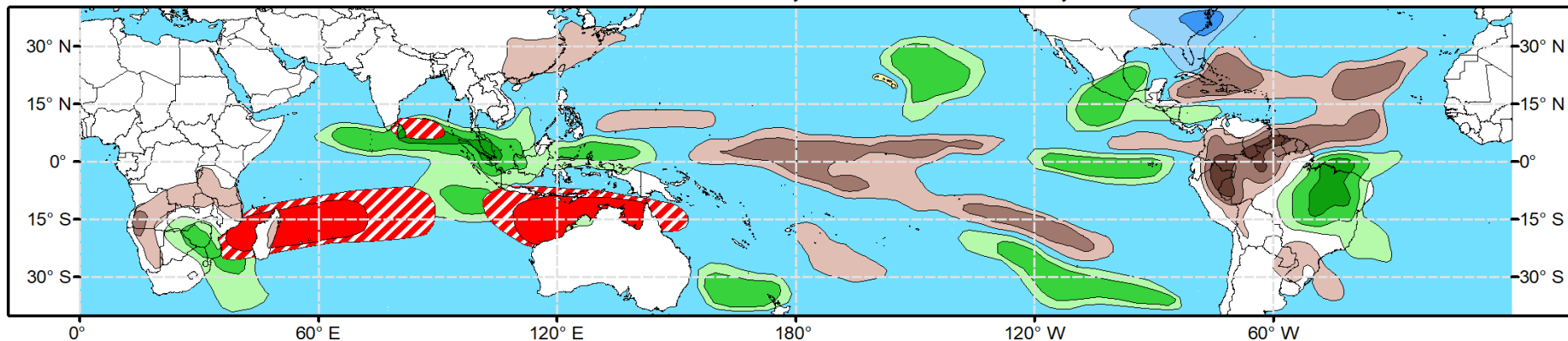


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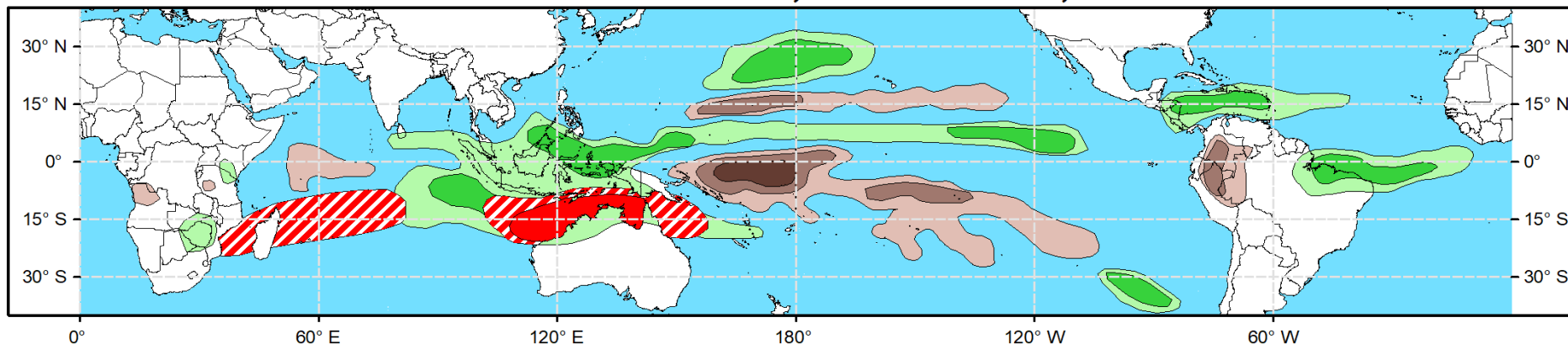
Climate Prediction Center



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