



# Weeks 2-3 Global Tropics Hazards Outlook

12/10/2024

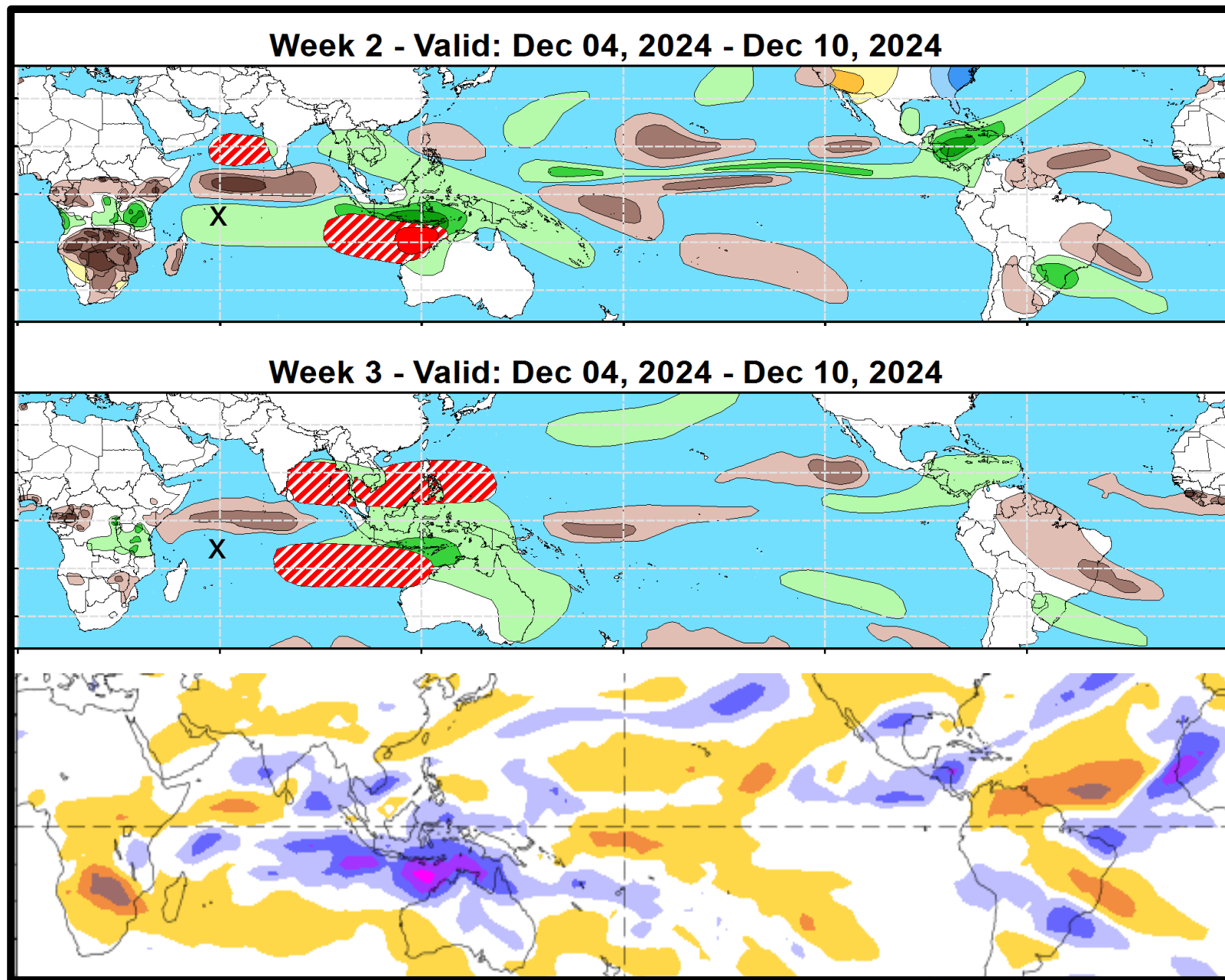
Brad Pugh

NWS / NCEP / Climate Prediction Center

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

Dec 9<sup>th</sup>: Tropical Cyclone Chido

Joint Typhoon Warning Center:  
Monitoring 3 areas in the  
southeastern Indian Ocean and  
near northern Australia



# Synopsis of Climate Modes:

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**ENSO:** (Nov 14, 2024 Update)      *next update on Thursday, Dec 12<sup>th</sup>*

- ENSO Alert System Status: [La Niña Watch](#)
- La Niña is most likely to emerge in October-December 2024 (57% chance) and is expected to persist through January-March 2025.

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

- The MJO shifted east from the Indian Ocean to the Maritime Continent since late November. However, its eastward propagation has slowed due to interference from a equatorial Rossby wave and the emerging La Niña.
- Dynamical models depict a continued slow eastward propagation over the Pacific during mid to late December, but there is high uncertainty on its strength.
- Tropical cyclone development is most likely across portions of the Indian Ocean, West Pacific, and near northern Australia the next few weeks.
- If the MJO maintains moderate amplitude and propagates east over the Pacific, then chances for below-normal temperatures would increase across the eastern U.S. by early January.

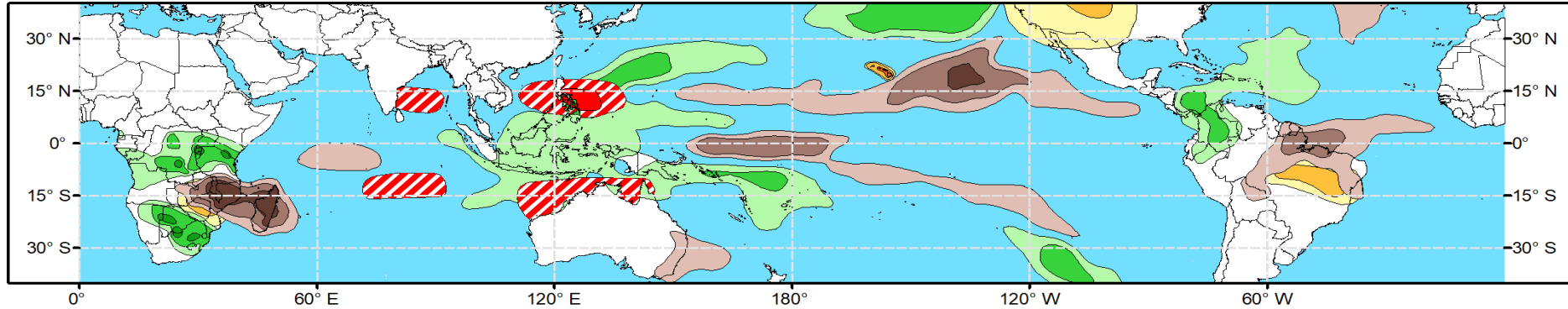
# GTH Outlook:



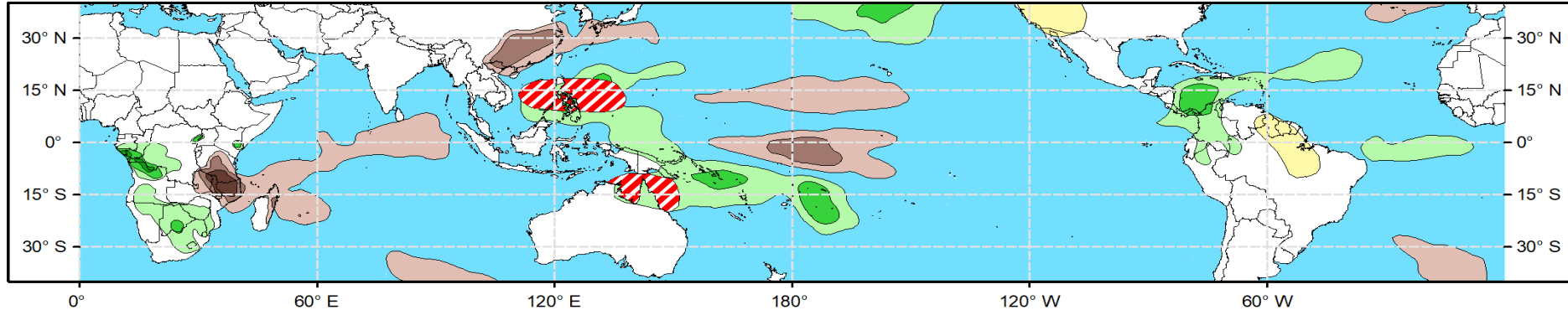
## Global Tropics Hazards Outlook Climate Prediction Center



**Week 2 - Valid: Dec 18, 2024 - Dec 24, 2024**



**Week 3 - Valid: Dec 25, 2024 - Dec 31, 2024**



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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*

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*Weekly total rainfall in the  
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*7-day max temperatures in the  
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*7-day min temperatures in the  
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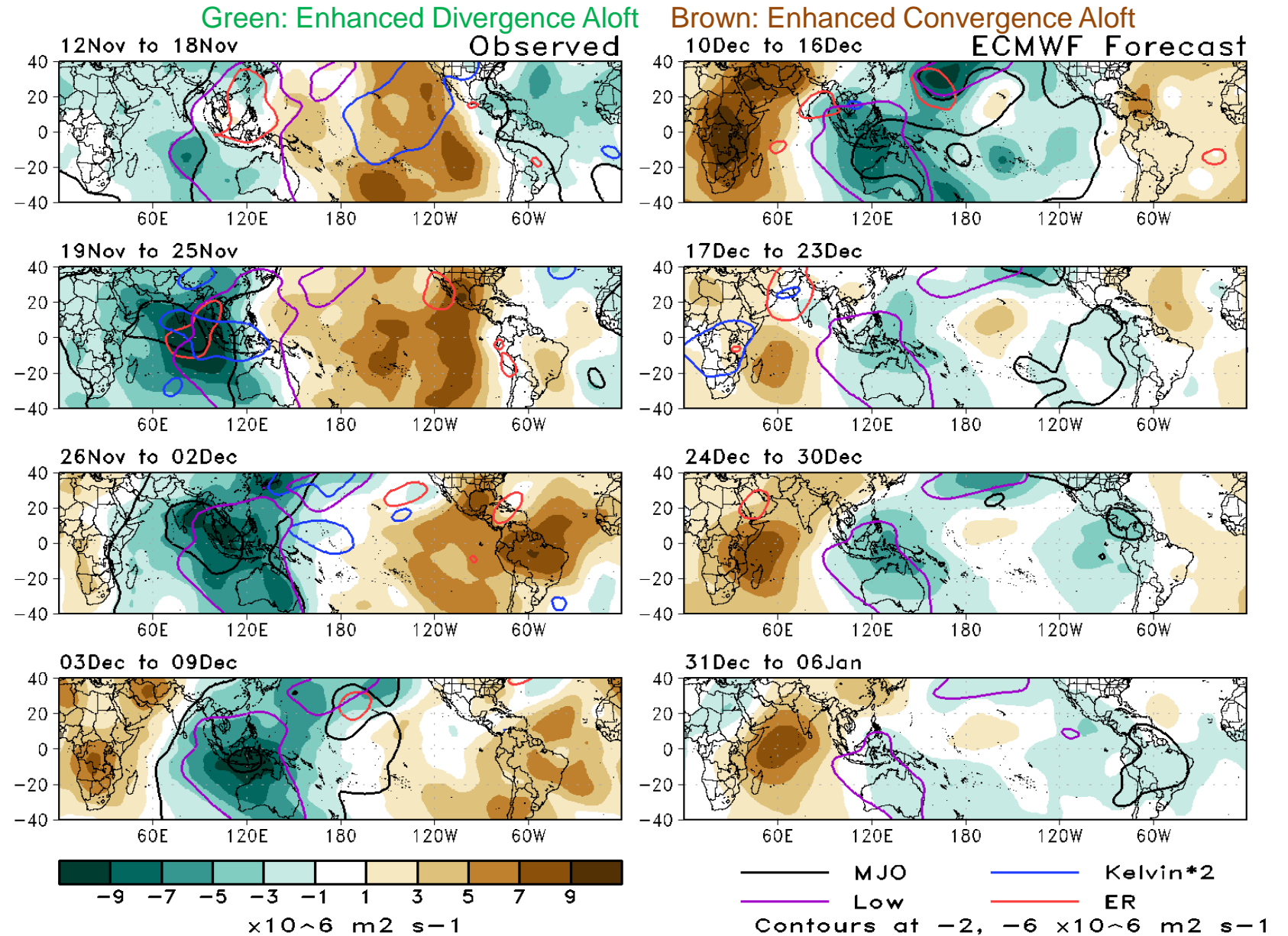
**Issued: 12/10/2024**

**Forecaster: Pugh**

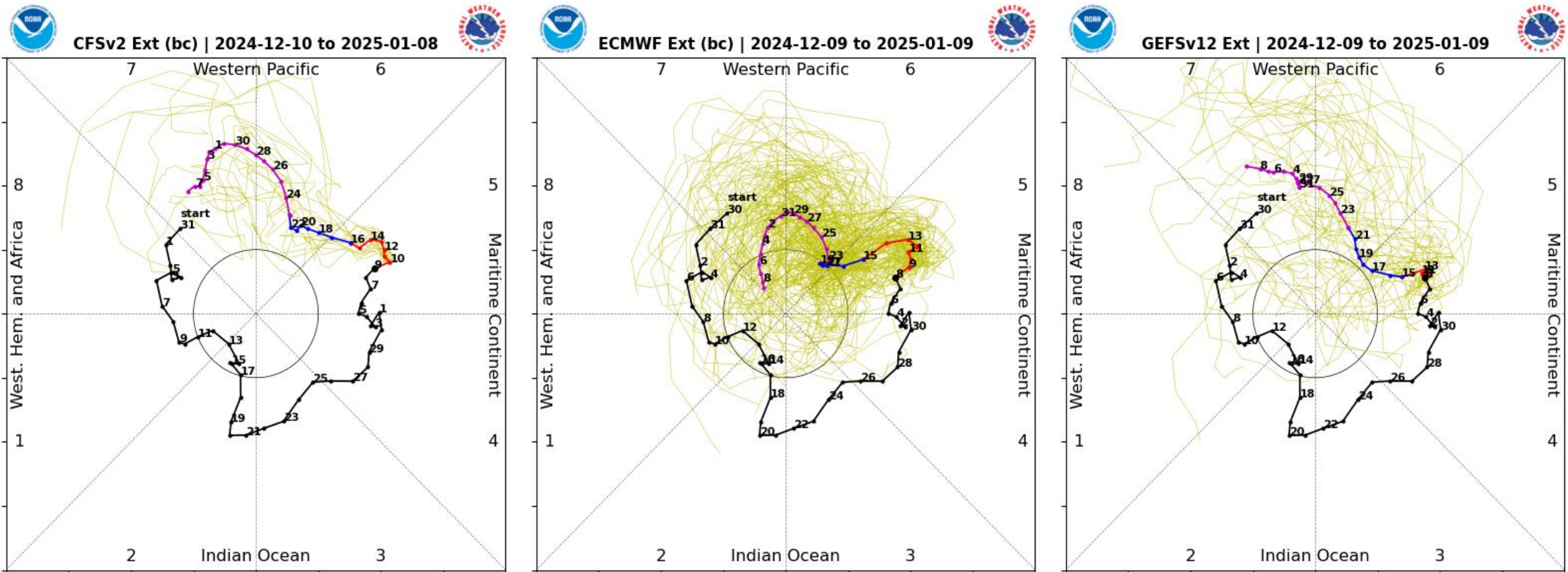
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Consult your local responsible forecast agency.**

# 200-hPa Velocity Potential Anomaly Maps:

- 7-day observations since late November reflect the slow phase speed of the MJO.
- During mid to late December, the ECMWF model depicts the anomalous upper-level divergence shifting east of the Date Line. Anomalies are smaller even by week-2 which is consistent with higher forecast uncertainty.



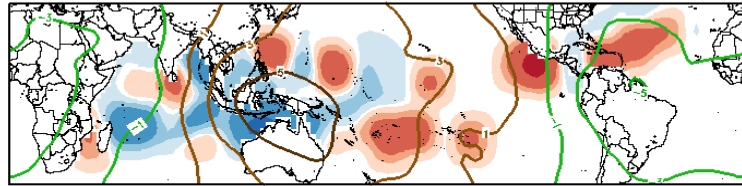
# RMM Index Observations & Forecasts:



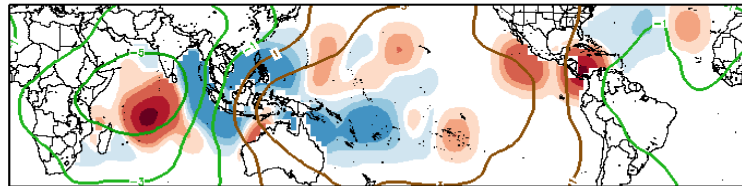
- The CFS, ECMWF, and GEFS depict continued eastward propagation (through phases 5, 6, and 7) into the New Year. However, ensemble spread is large on the amplitude.
- Good agreement between the ECMWF and GEFS for at least a brief weakening during mid-December.

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

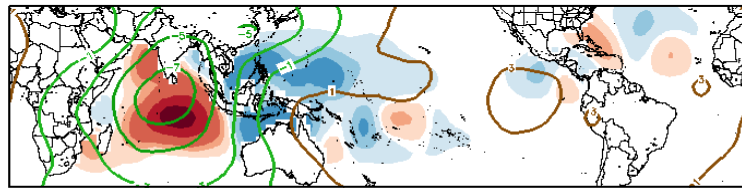
NDJ MJO Composite: Mean TC Origin Density Anomaly ( $\#TCs/277km^2*100$ )  
w/ NDJ CHI200 ( $\times 10^6 m^2 s^{-1}$ ) / Contours every  $2 \times 10^6 m^2 s^{-1}$



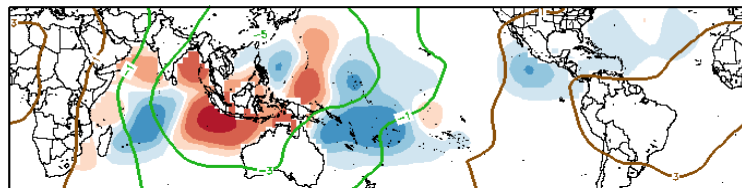
Phase 1



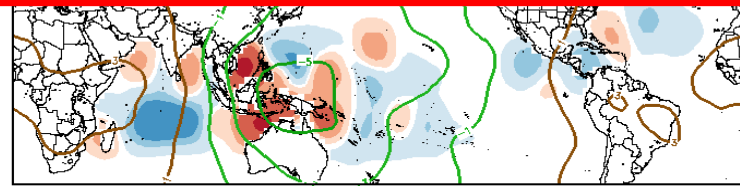
Phase 2



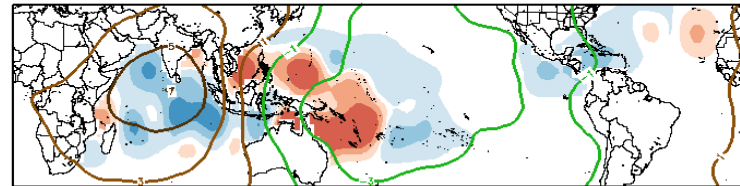
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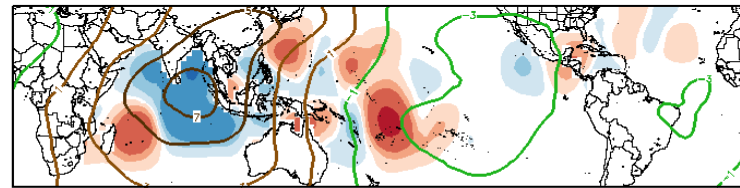
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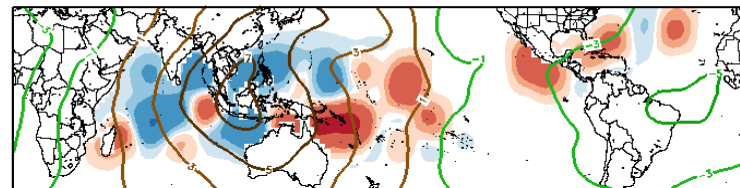
Phase 5



Phase 6



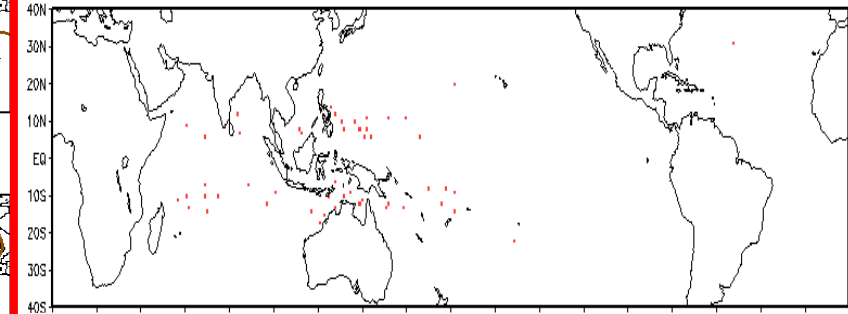
Phase 7



Phase 8

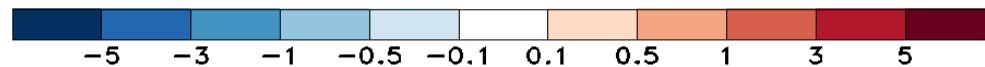
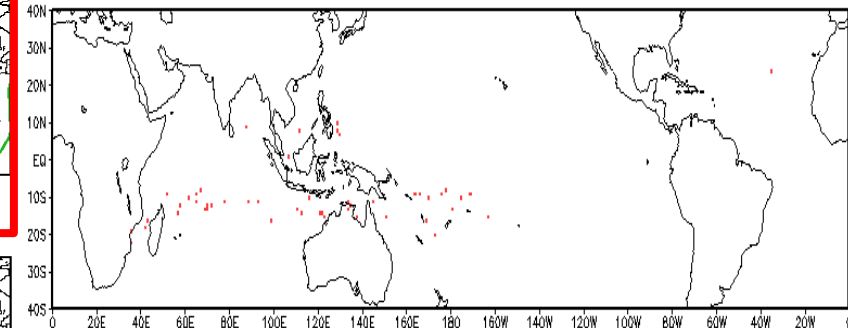
Observed TC Genesis, 1979-2021

7-day Period 1218 to 1224



Observed TC Genesis, 1979-2021

7-day Period 1225 to 1231

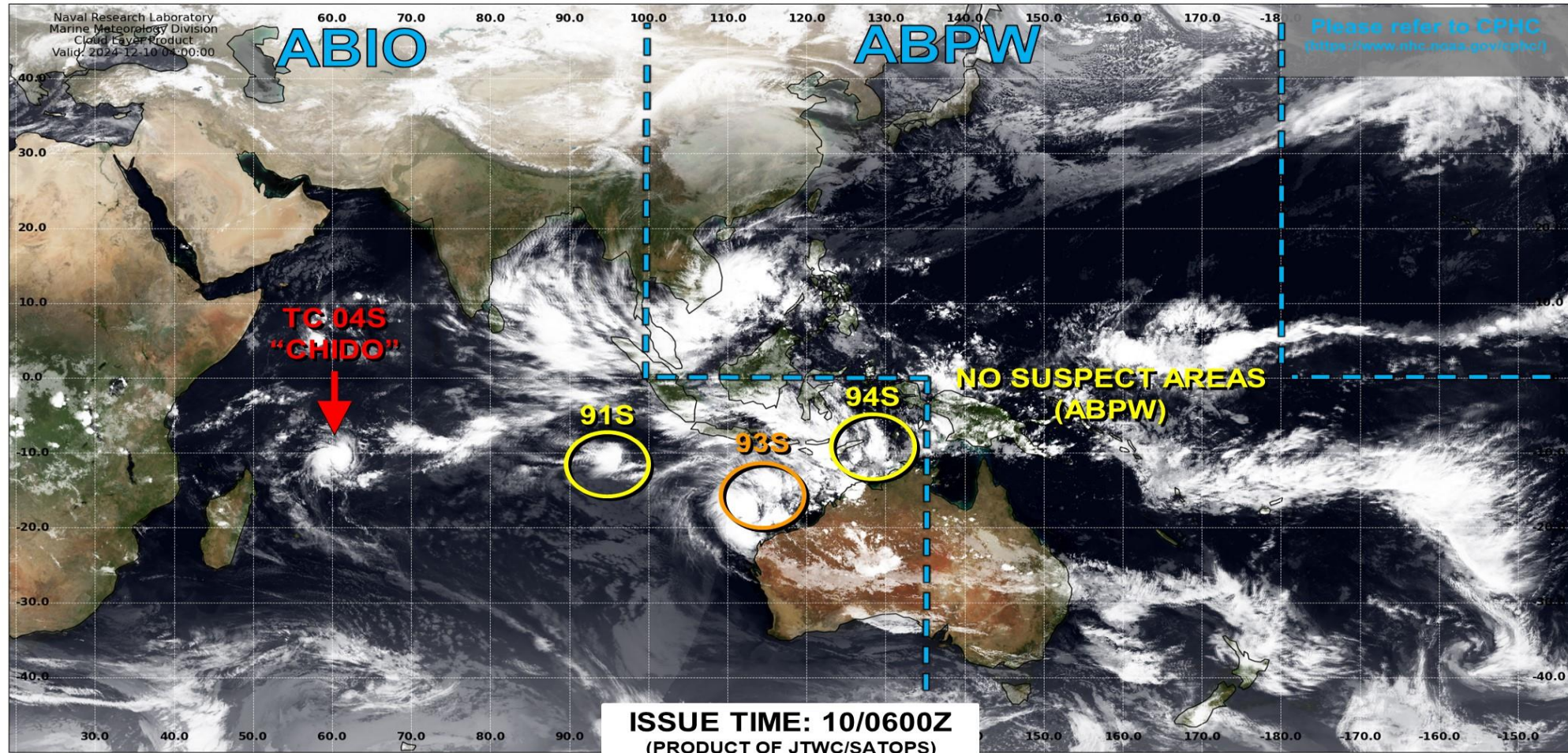


\*Experimental\*

# 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




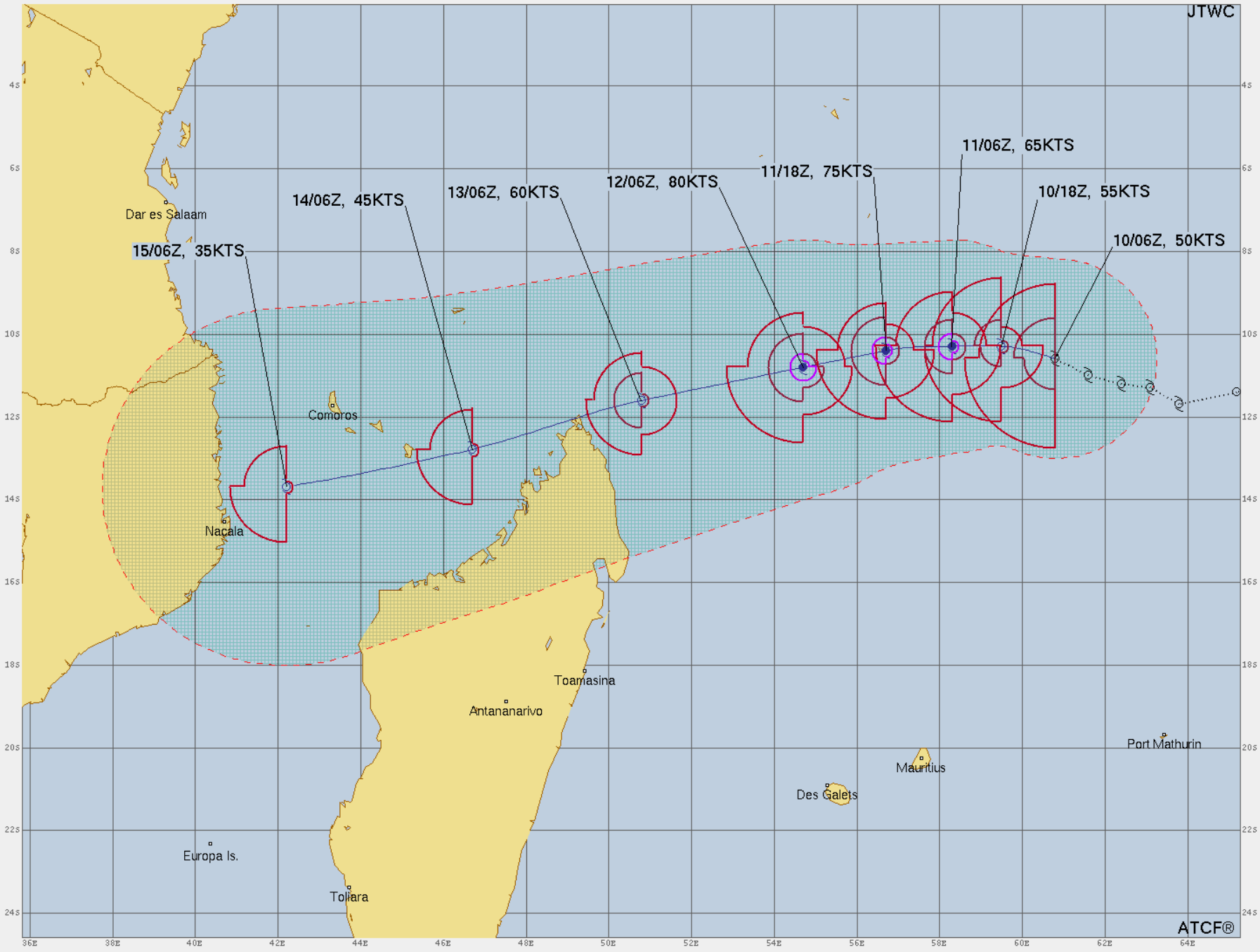


JTWC

TROPICAL CYCLONE 045 (CHIDO) WARNING #2  
 WTIX31 PGTW 100900  
 100600Z POSIT. NEAR 10.55 60.0E  
 MOVING 235 DEGREES TRUE AT 09 KNOTS  
 MAXIMUM SIGNIFICANT WAVE HEIGHT: 18 FEET  
 10/06Z, WINDS 050 KTS, GUSTS TO 065 KTS  
 10/18Z, WINDS 055 KTS, GUSTS TO 070 KTS  
 11/06Z, WINDS 065 KTS, GUSTS TO 080 KTS  
 11/18Z, WINDS 075 KTS, GUSTS TO 090 KTS  
 12/06Z, WINDS 080 KTS, GUSTS TO 100 KTS  
 13/06Z, WINDS 080 KTS, GUSTS TO 075 KTS  
 14/06Z, WINDS 045 KTS, GUSTS TO 055 KTS  
 15/06Z, WINDS 035 KTS, GUSTS TO 045 KTS

CPR TO: ANTANANARIVO NM DTG 366 12/14/10Z

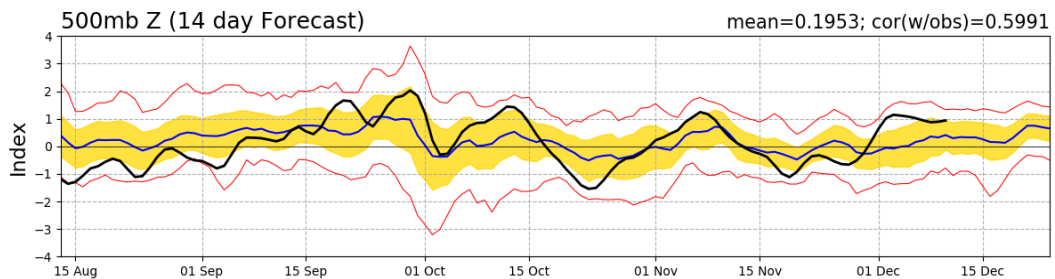
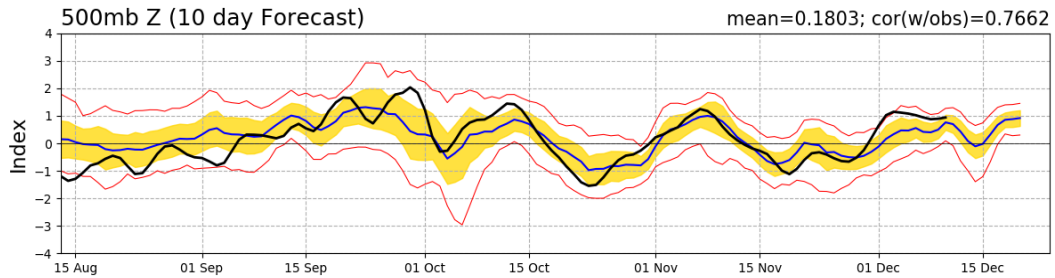
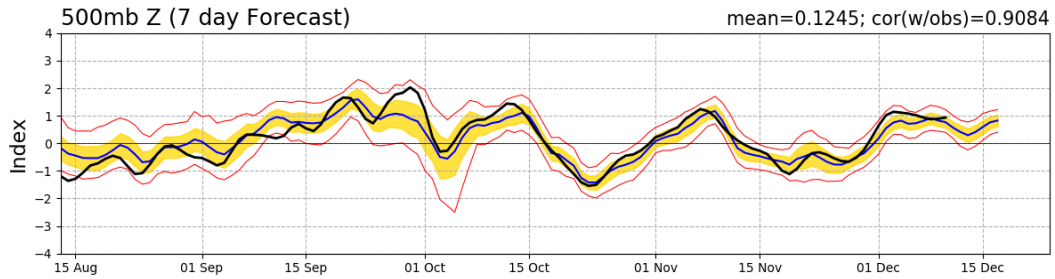
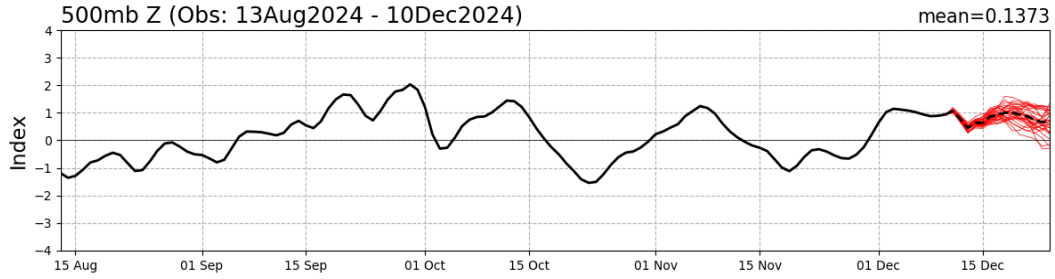
- LESS THAN 34 KNOTS
- 34-63 KNOTS
- MORE THAN 63 KNOTS
- FORECAST CYCLONE TRACK
- ..... PAST CYCLONE TRACK
- DENOTES 34 KNOT WIND DANGER AREA/USN SHIP AVOIDANCE AREA
- FORECAST 34/50/64 KNOT WIND RADII (WINDS VALID OVER OPEN OCEAN ONLY)

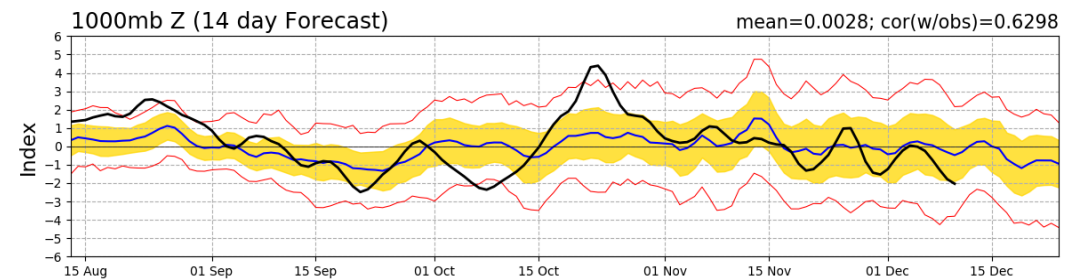
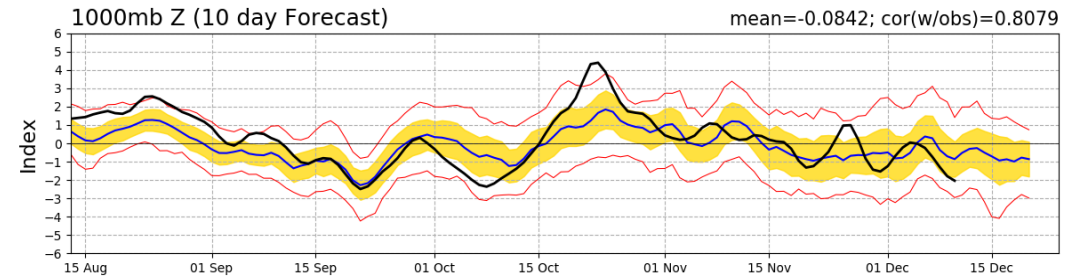
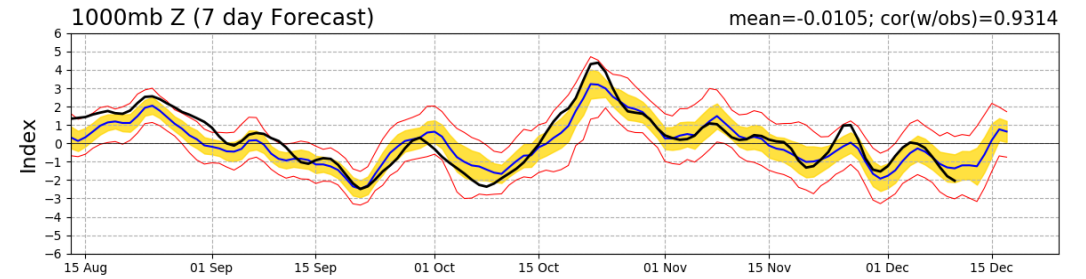
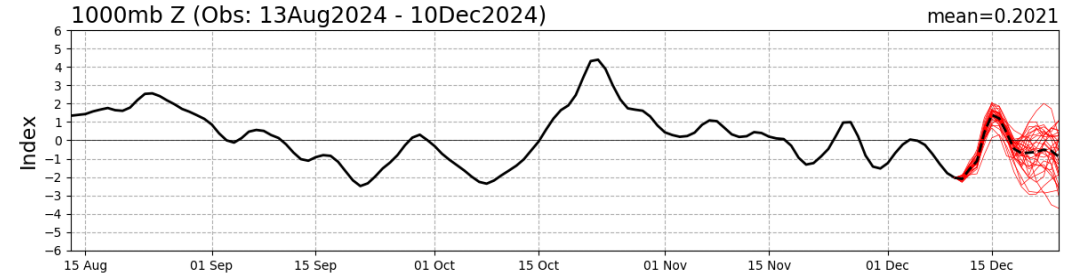
ATCF®

# Teleconnection Indices: PNA / AO:

## PNA Index: Observed & GEFS Forecasts



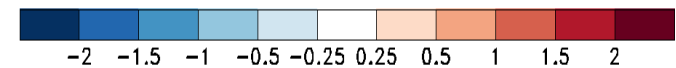
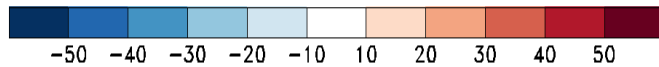
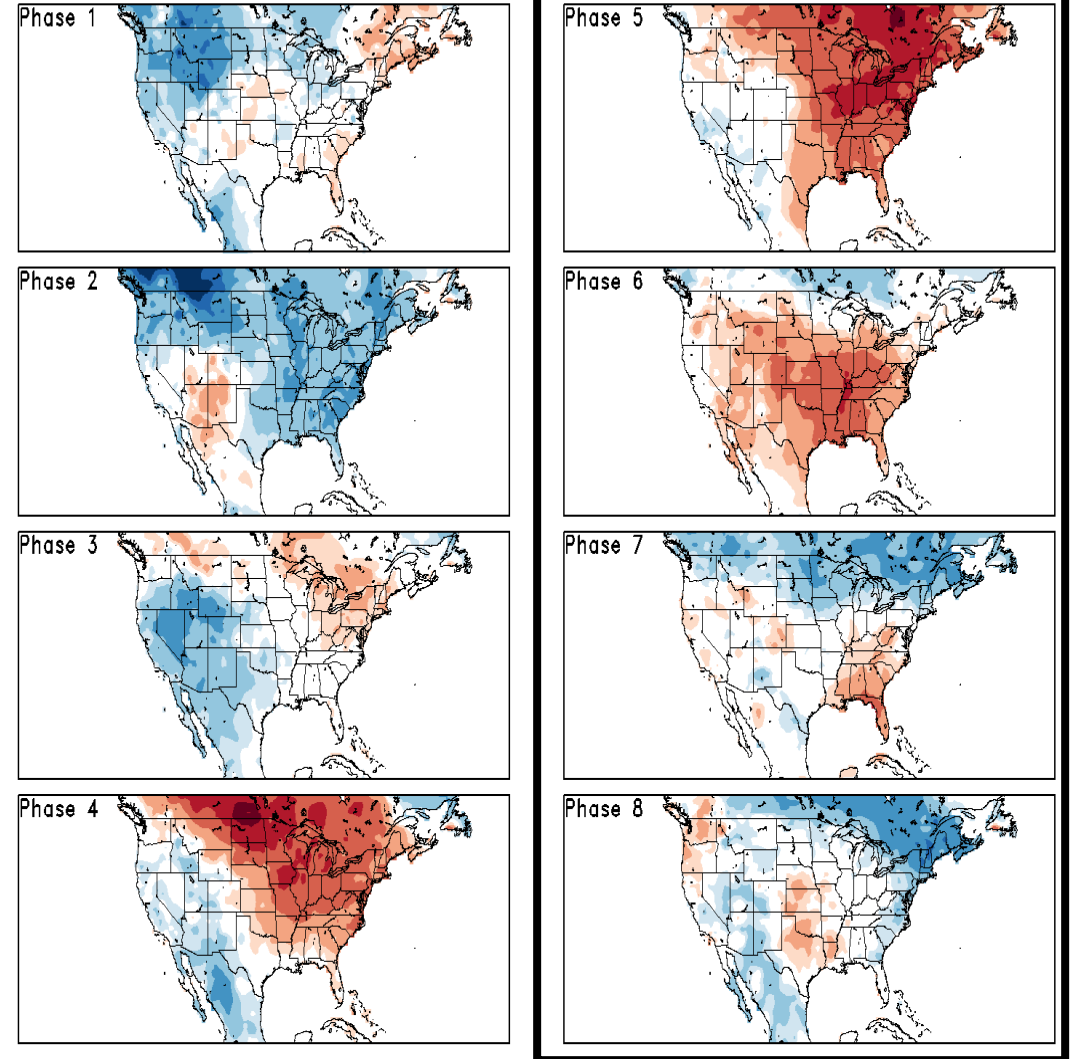
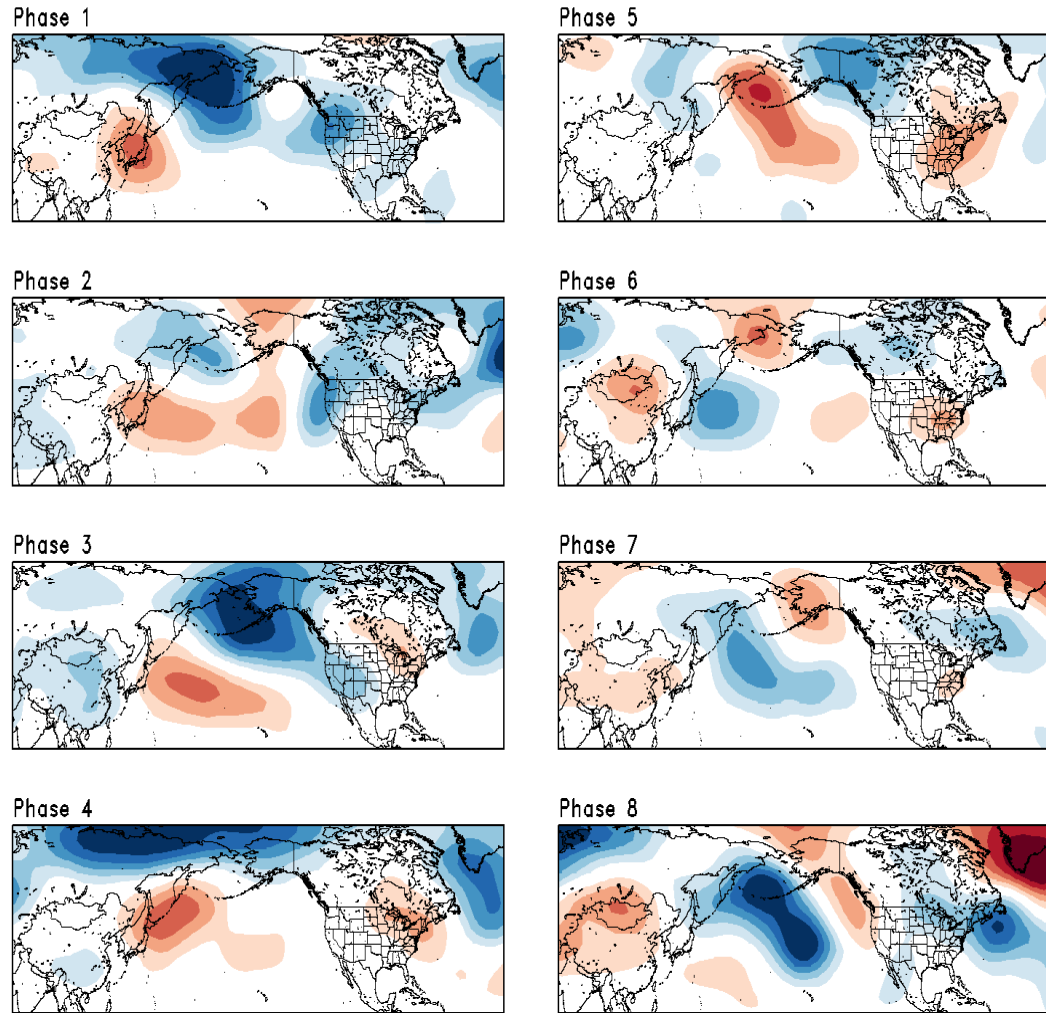
## AO Index: Observed & GEFS Forecasts



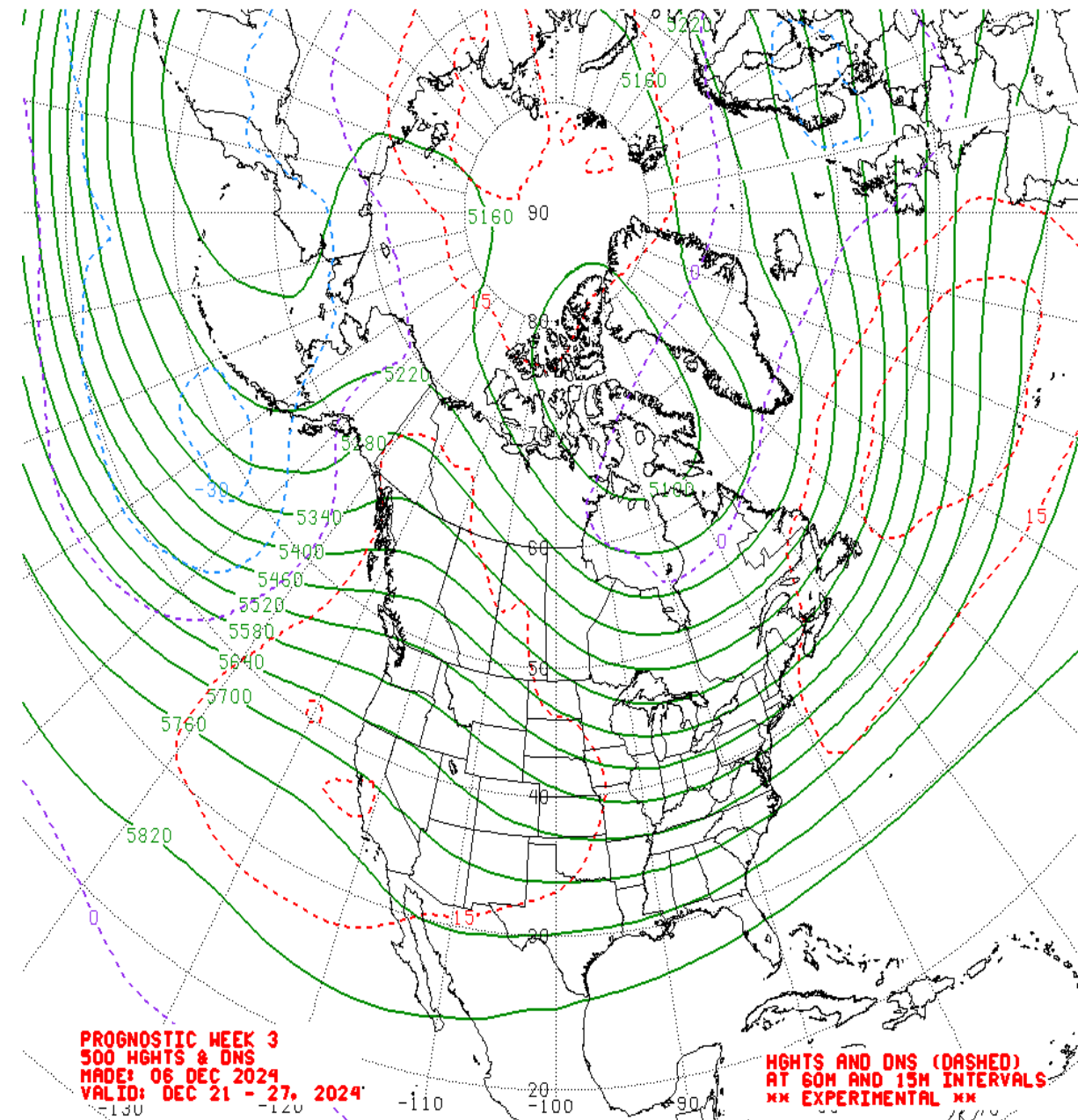
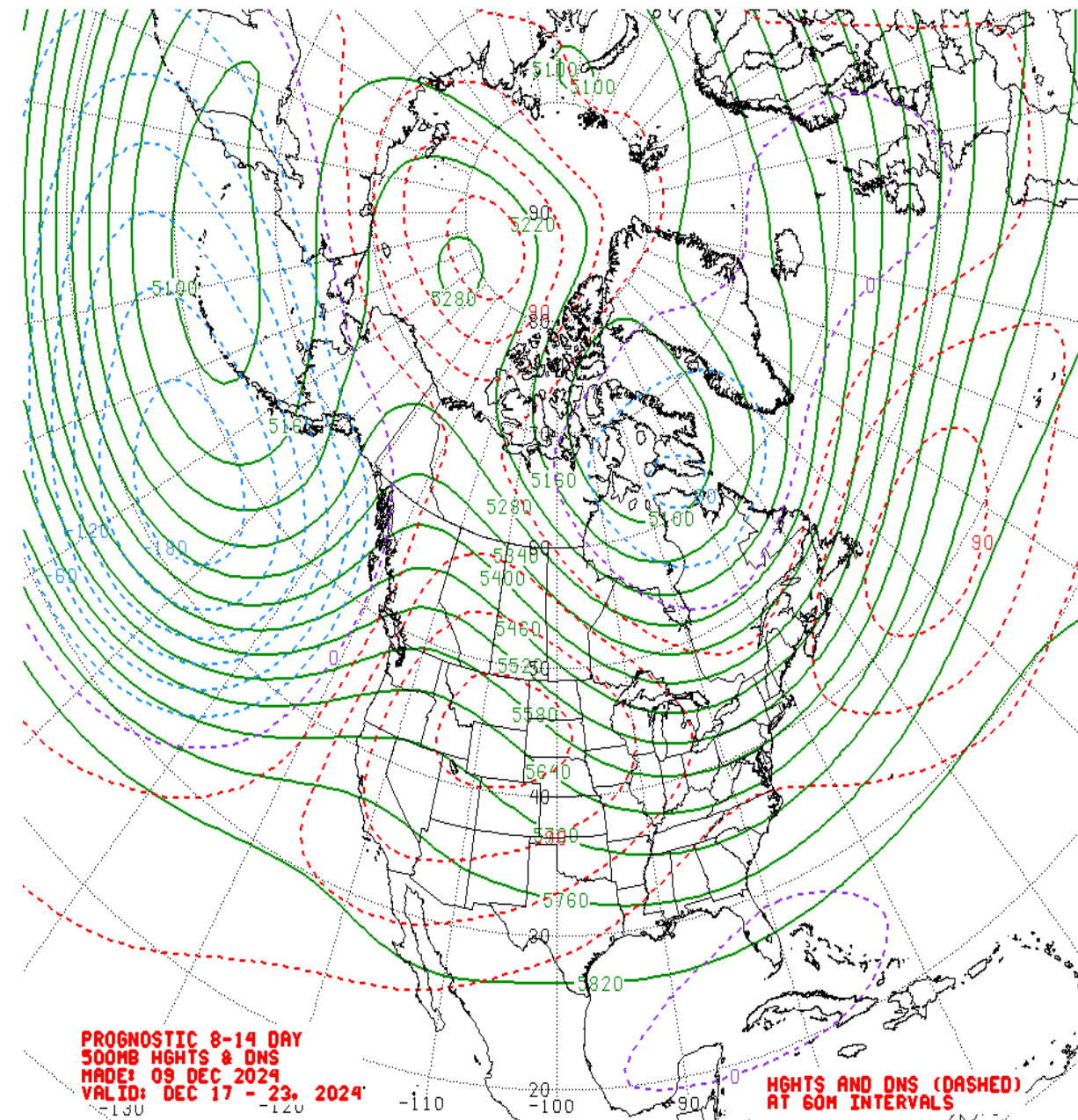
# Historical 500-hPa Height & U.S. Temperatures By MJO Phase:

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

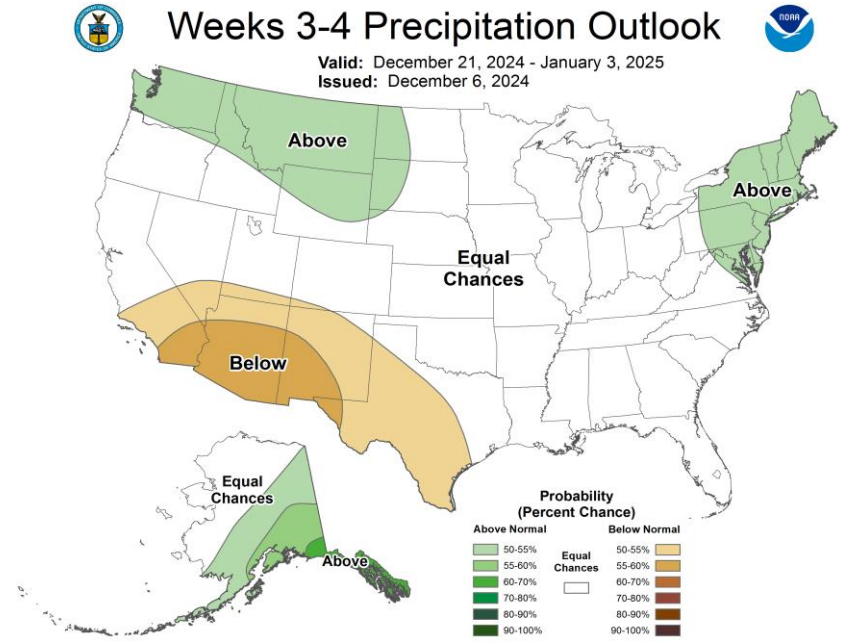
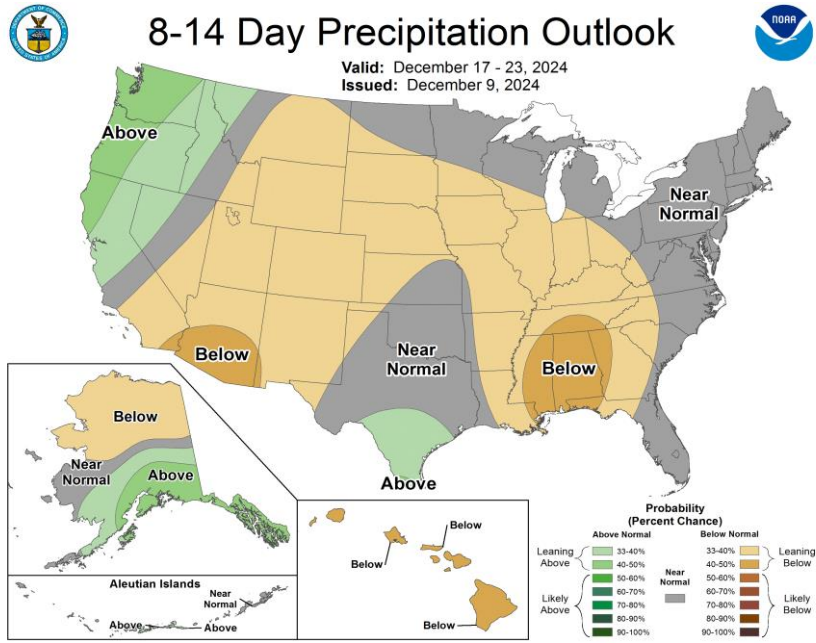
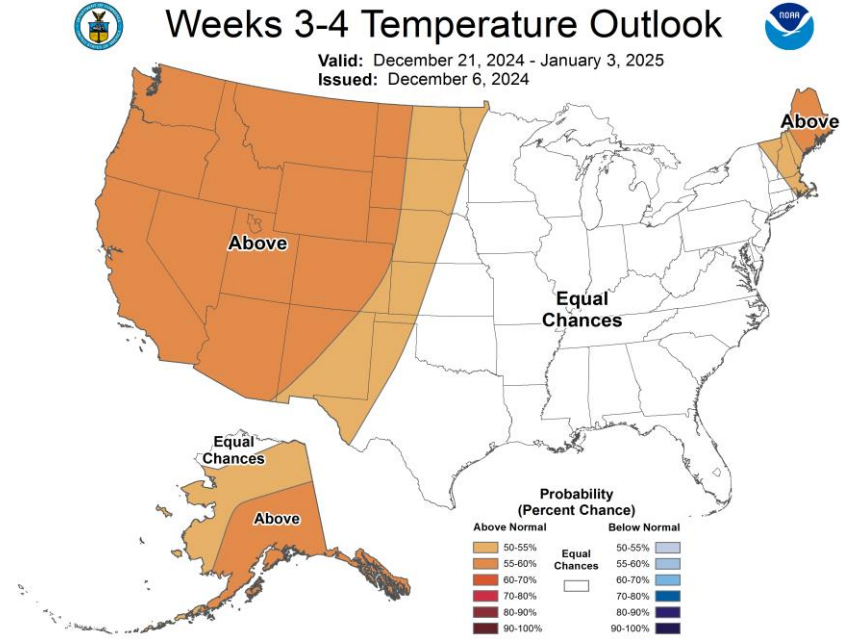
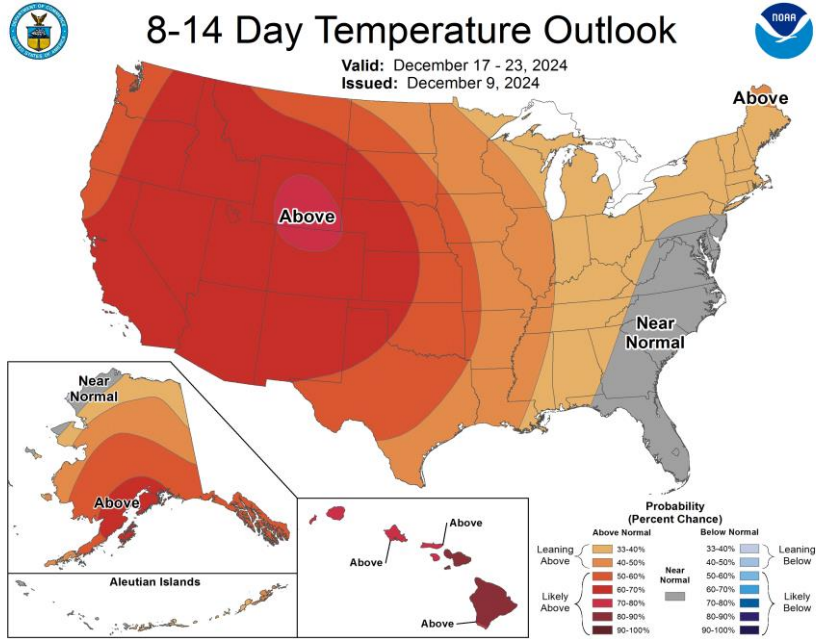
NDJ MJO Composite: GLBT (degC)



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



# Official Temperature & Precipitation Forecasts:



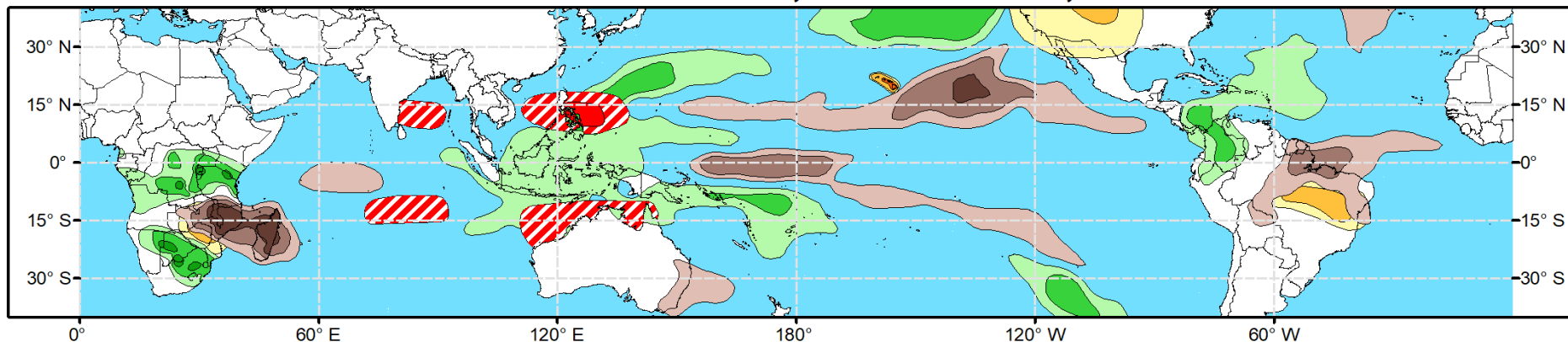


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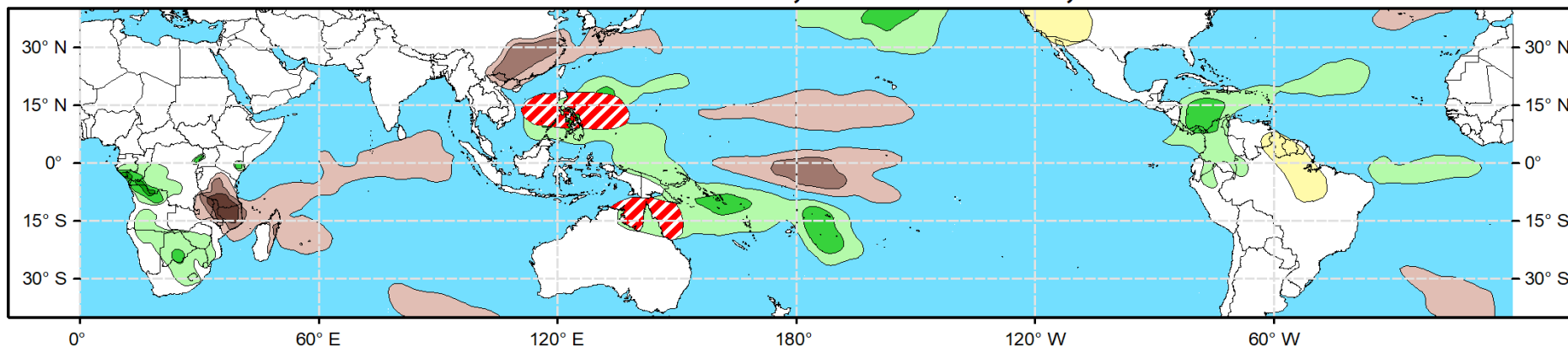
Climate Prediction Center



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