



# Weeks 2-3 Global Tropics Hazards Outlook

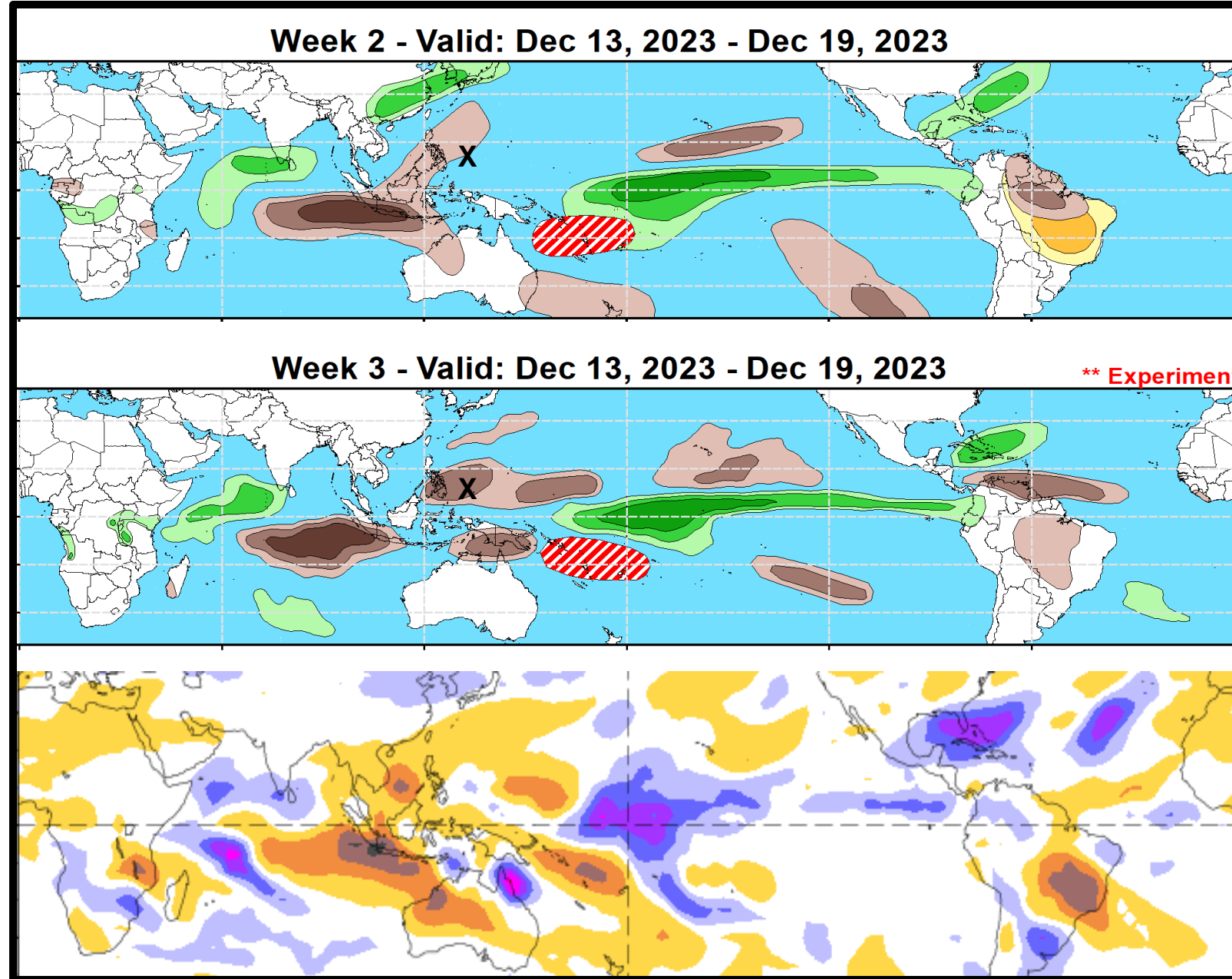
12/19/2023

Adam Allgood

NWS / NCEP / Climate Prediction Center

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

- El Niño related anomalies were well captured in the outlook.
- TS Jejewat formed on 17 Dec just east of the Philippines.
- Northern IO convection was well forecast.



# Synopsis of Climate Modes:

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**ENSO:** (Dec 14, 2023 Update)      *next update on Thursday, Jan 11<sup>th</sup>*

- ENSO Alert System Status: [El Niño Advisory](#)
- El Niño is expected to continue through the Northern Hemisphere winter, with a transition to ENSO-neutral favored during April-June 2024 (60% chance).

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

- The MJO remains active, with the enhanced convective phase now crossing the Pacific and entering the Western Hemisphere.
- Dynamical model MJO index forecasts depict a coherent MJO signal circumnavigating the globe over the next month, with the enhanced phase reaching the Indian Ocean during Week-2, and the Maritime Continent during Week-3.
- The MJO is contributing to a weakening of the +IOD signal that has been in place since the boreal autumn, and a strong WWB over the central Pacific.
- The MJO is favored to influence the global tropical convective pattern and midlatitude response; however, El Niño will likely remain the primary influencer of the pattern across the US.

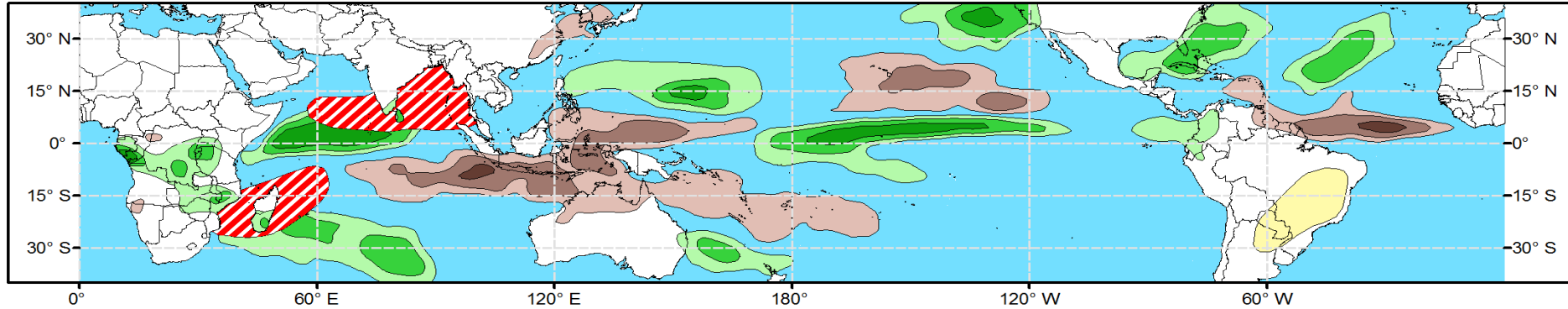
# GTH Outlook:



## Global Tropics Hazards Outlook Climate Prediction Center

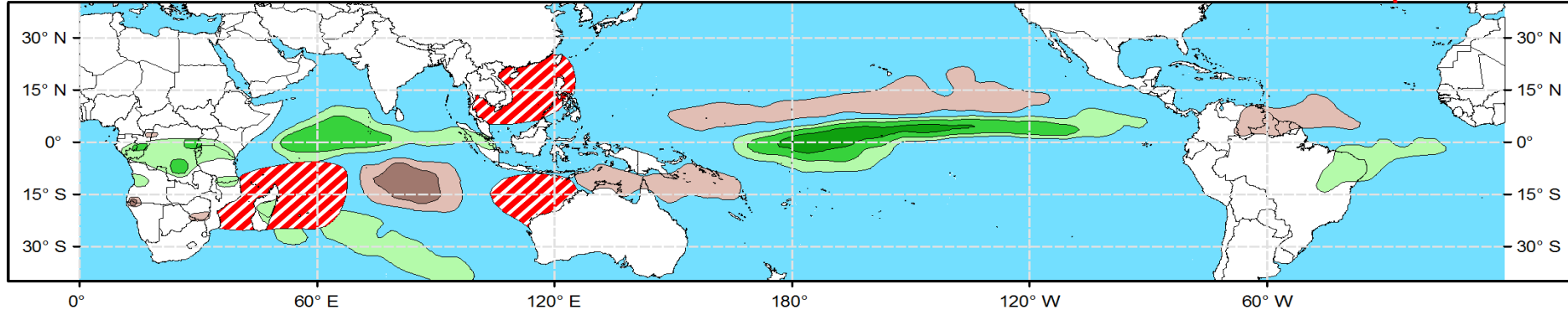


**Week 2 - Valid: Dec 27, 2023 - Jan 02, 2024**



**Week 3 - Valid: Jan 03, 2024 - Jan 09, 2024**

**\*\* Experimental \*\***



**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  
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**Below-Average  
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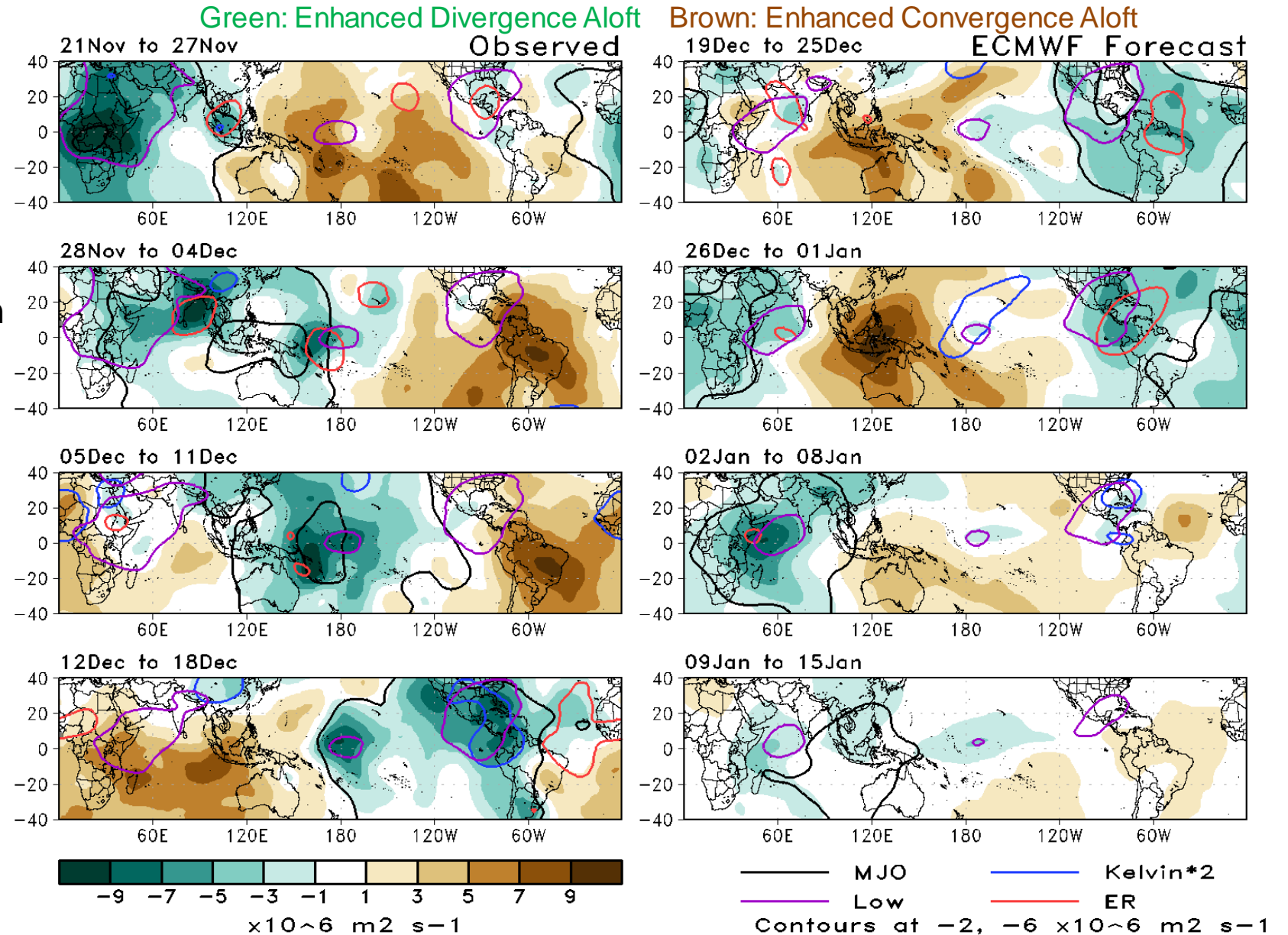
*7-day min temperatures in the  
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**Issued: 12/19/2023  
Forecaster: Allgood**

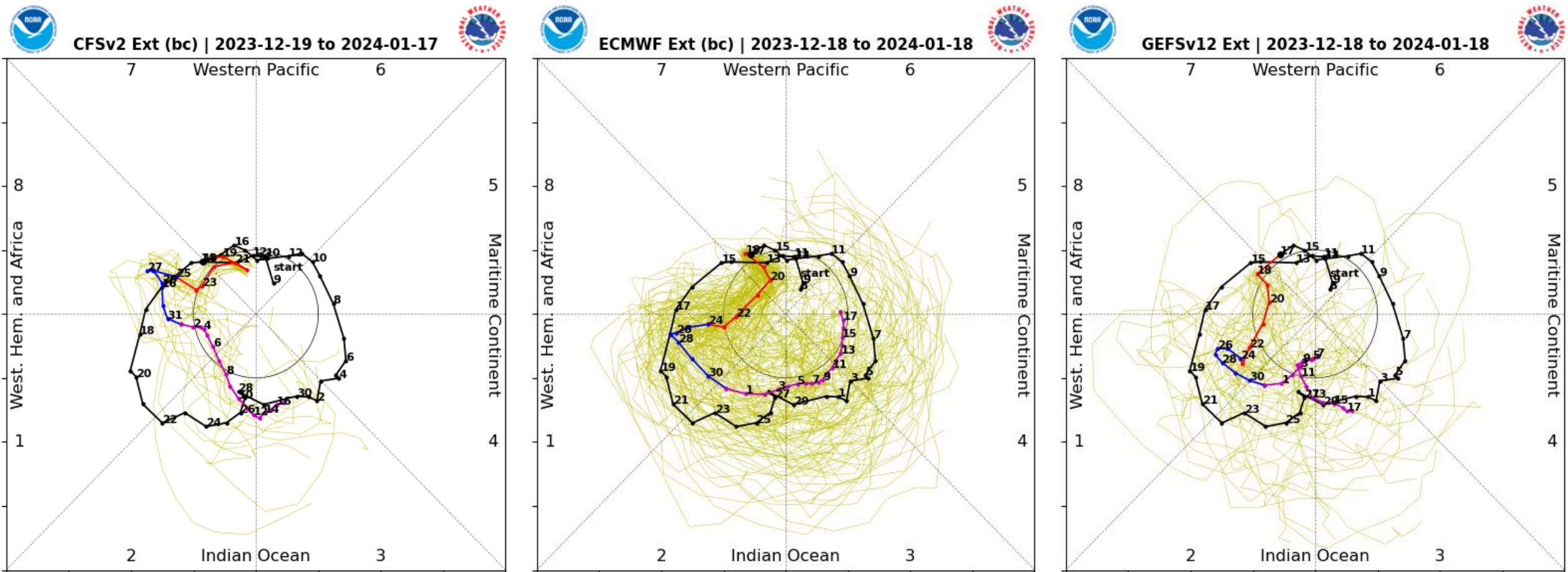
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Consult your local responsible forecast agency.**

# 200-hPa Velocity Potential Anomaly Maps:

- Robust MJO propagation is evident in the upper-level OLR field.
- Continued eastward propagation is favored during Weeks 1-4 (ECMWF forecast).
- Destructive interference between the MJO and El Niño signals is evident, particularly during Weeks 2-3.

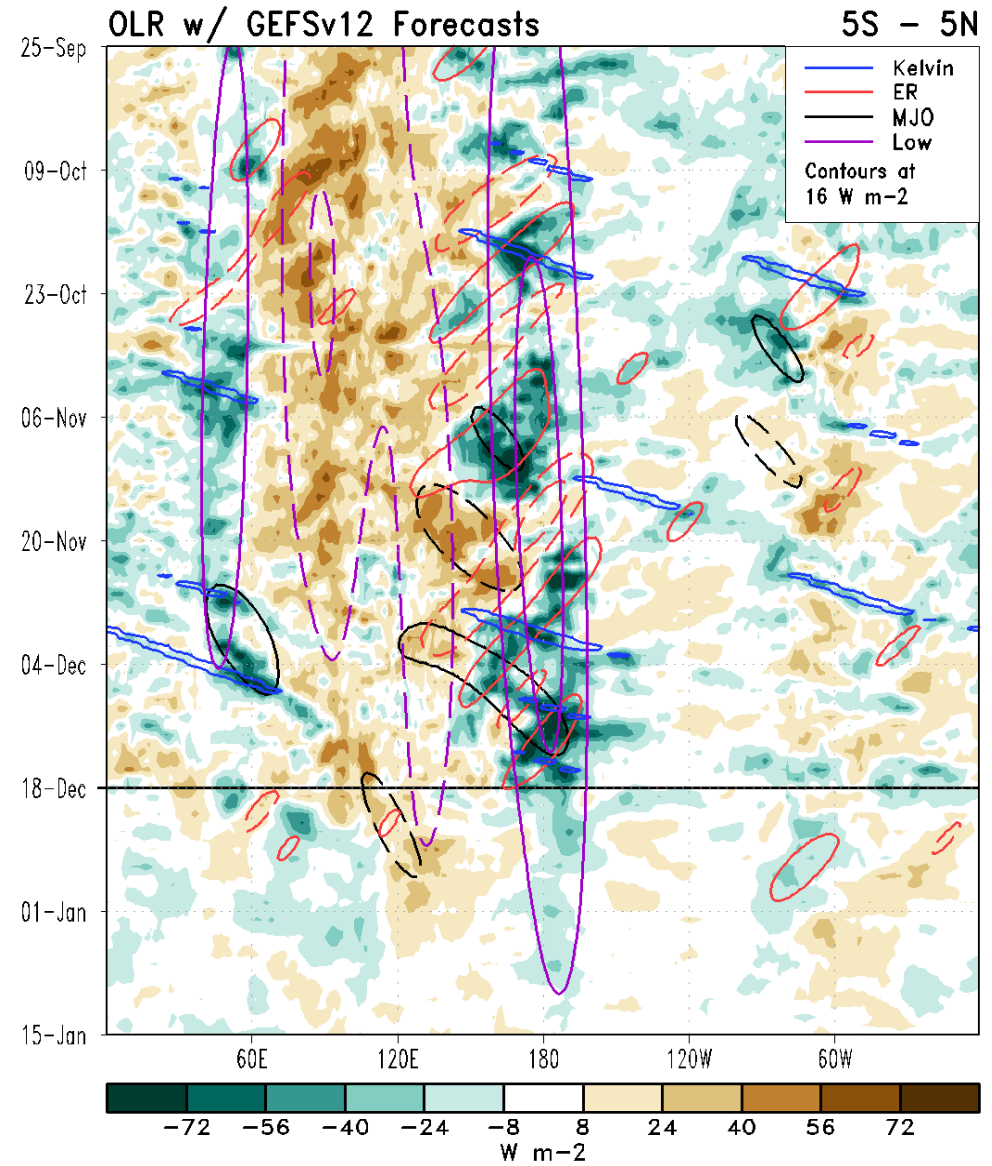
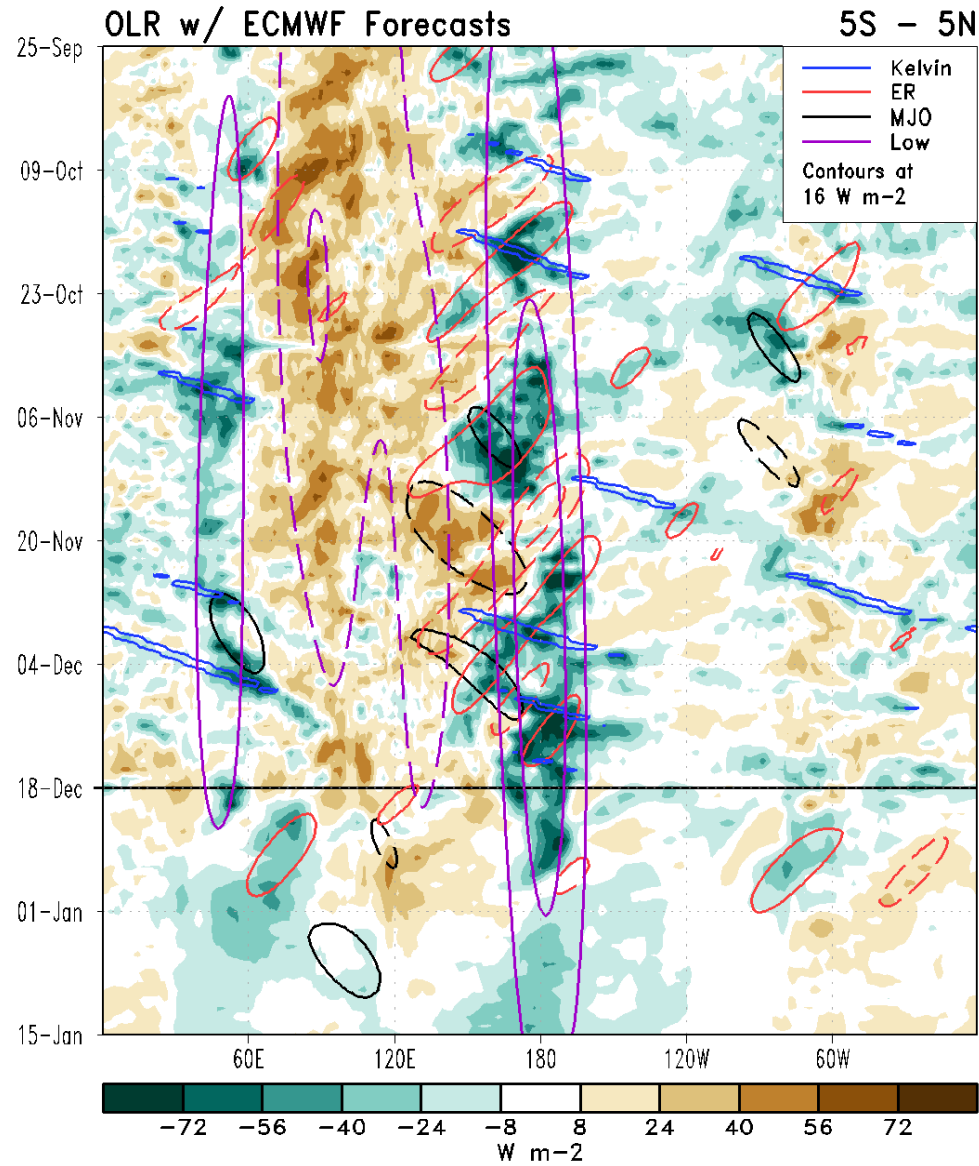


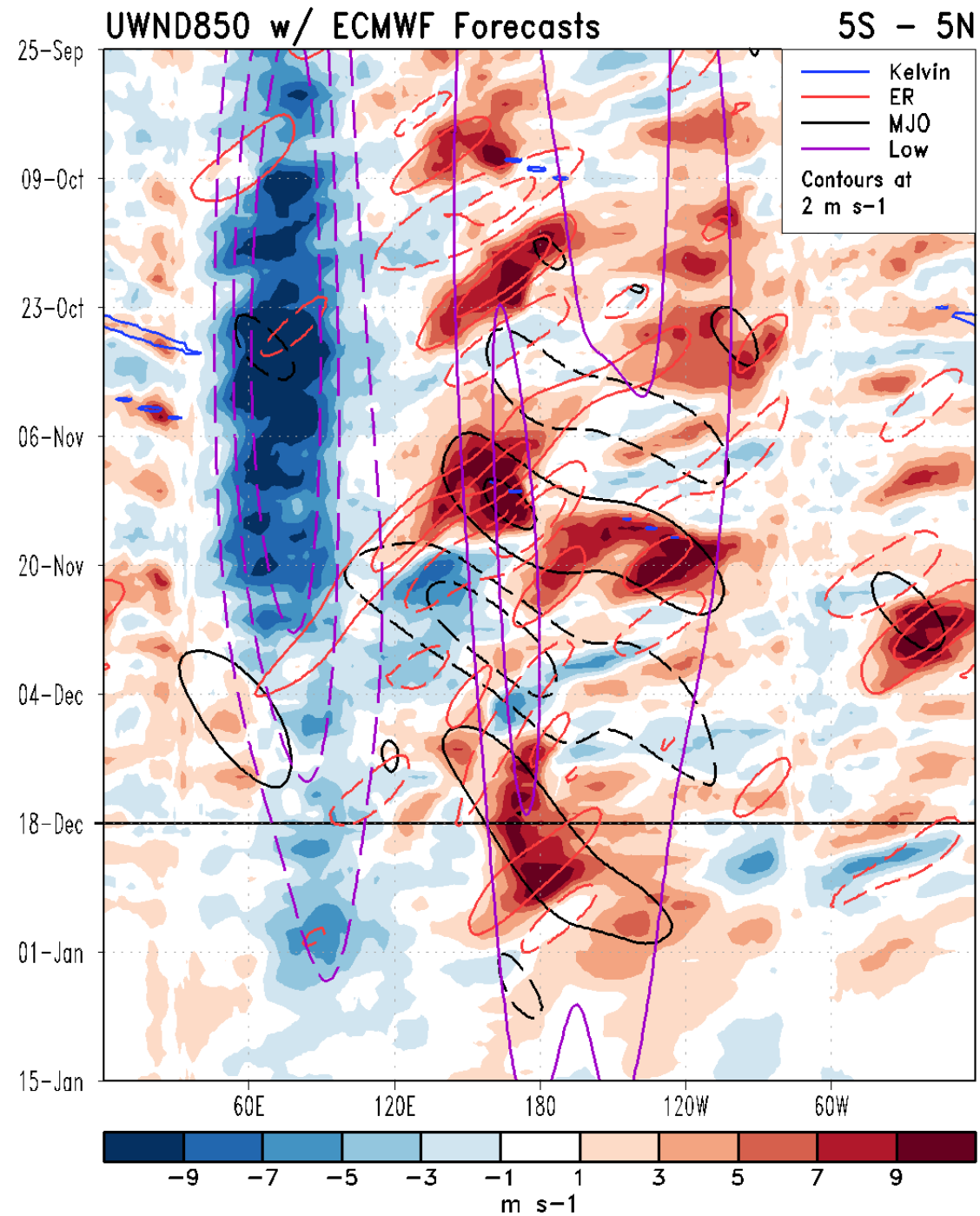
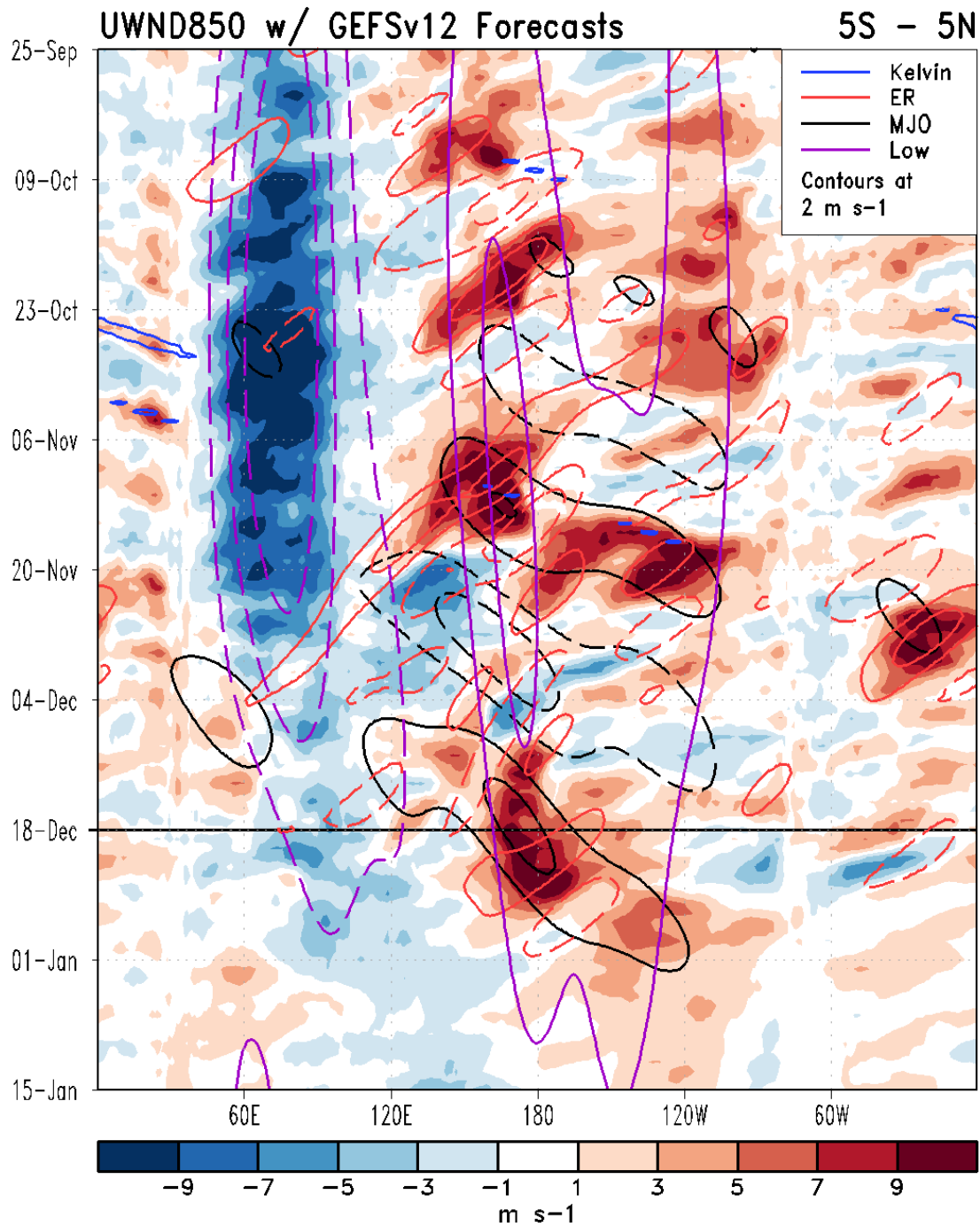
# RMM Index Observations & Forecasts:



- MJO activity is favored by all three model systems.
- The ECMWF is the fastest, bringing the MJO to the maritime Continent during Weeks 3-4. Some ensemble members even return to the West Pacific.
- Higher amplitude over the Indian Ocean basin may also reflect a weakening of the +IOD signal.

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



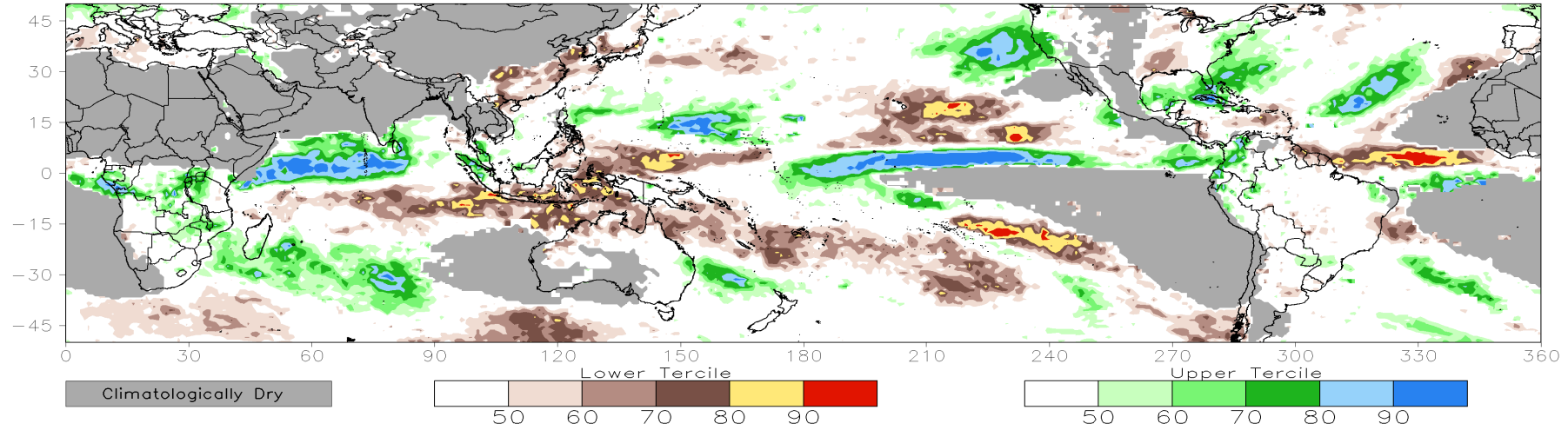




# Consolidated Probabilistic Precipitation: Weeks 2 & 3

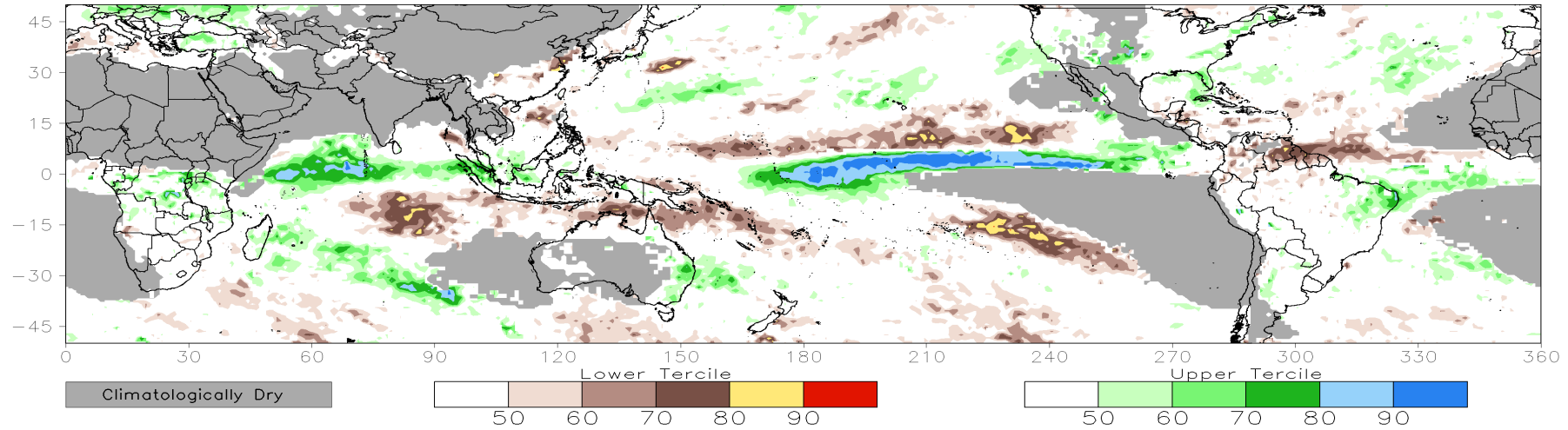
CONS 00z: Week2 Probability for Total Rainfall Below(Above) Lower(Upper) Tercile (%)

Valid: 27Dec2023–02Jan2024



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

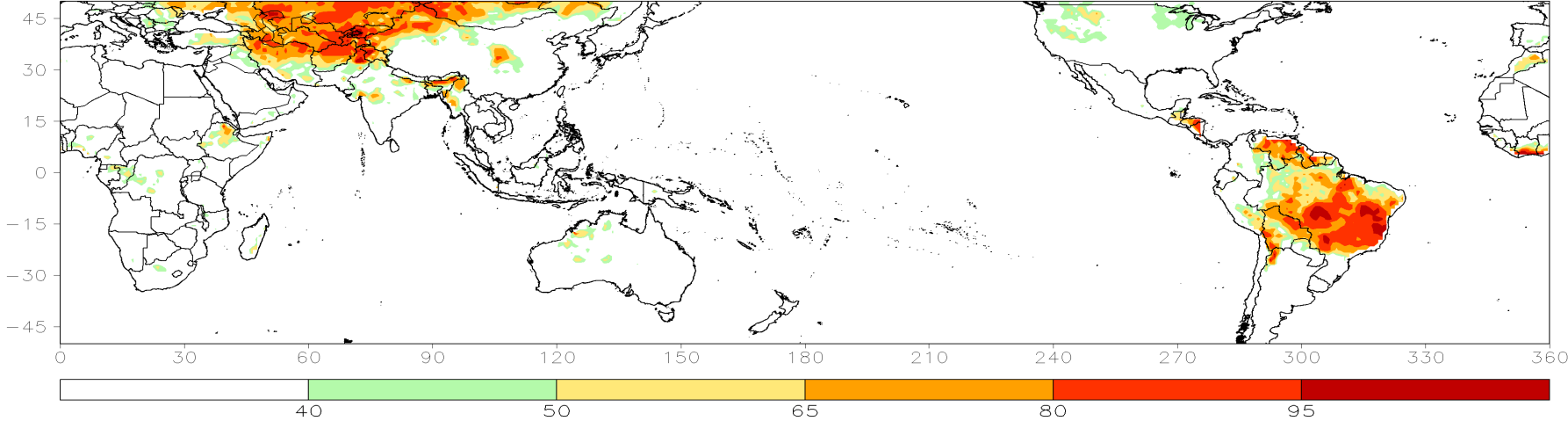
Valid: 03Jan2024–09Jan2024



# Consolidated Probabilistic Temperatures: Week-2

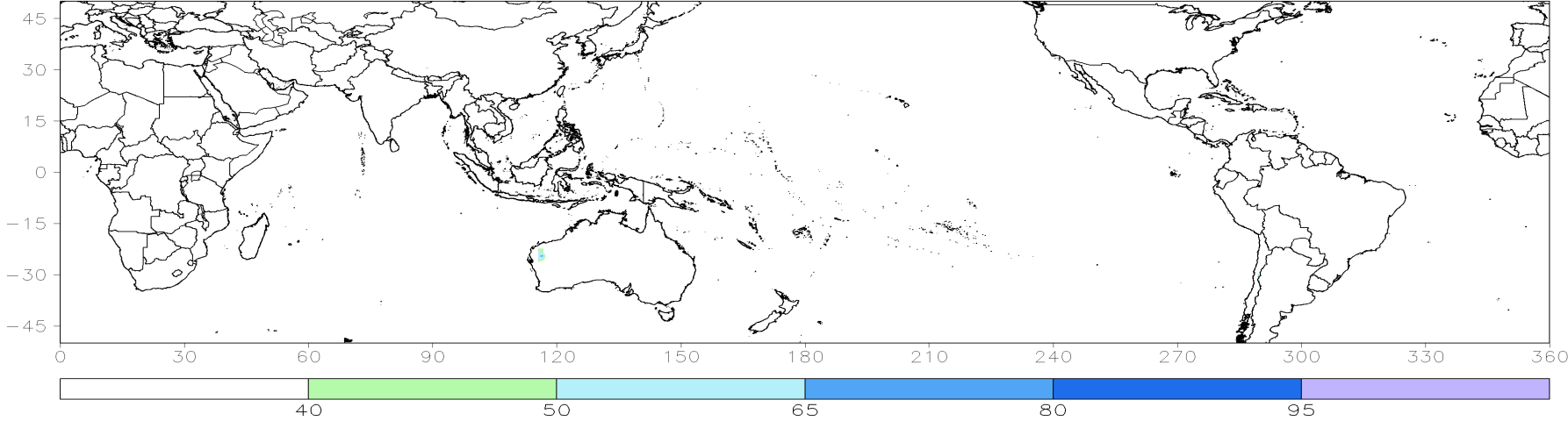
CFS/ECMWF/GEFS Correlation Weighted: Week2 Probability for Tmax Above Upper Tercile (%)

Valid: 27Dec2023-02Jan2024



CFS/ECMWF/GEFS Correlation Weighted: Week2 Probability for Tmin Below Lower Tercile (%)

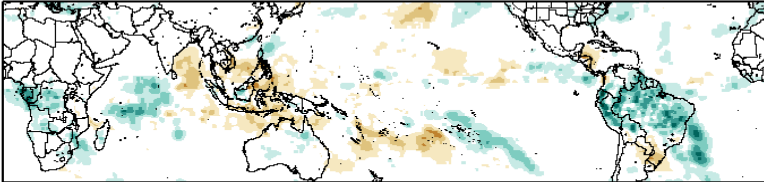
Valid: 27Dec2023-02Jan2024



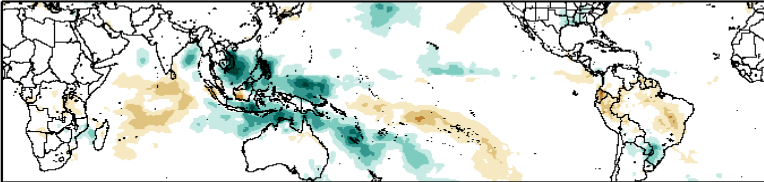
# Historical Precipitation Anomalies By MJO Phase:

NDJ MJO Composite: GPCP1DD (mm/day)

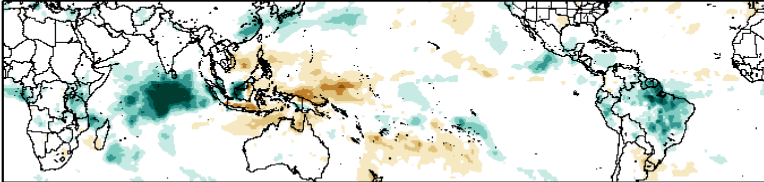
Phase 1



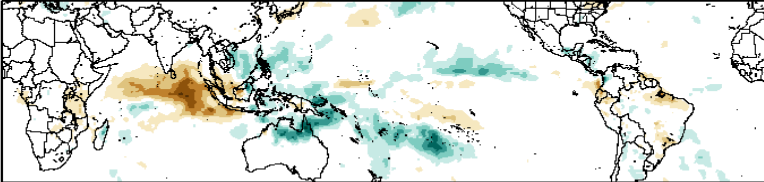
Phase 5



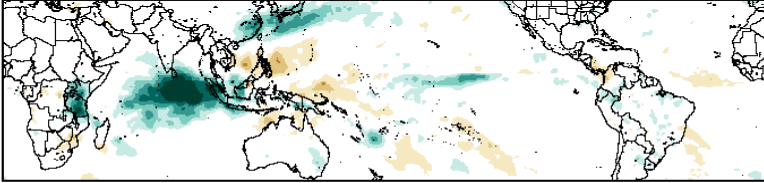
Phase 2



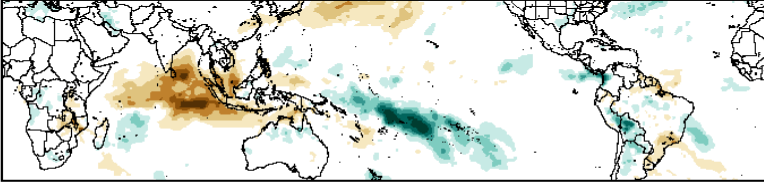
Phase 6



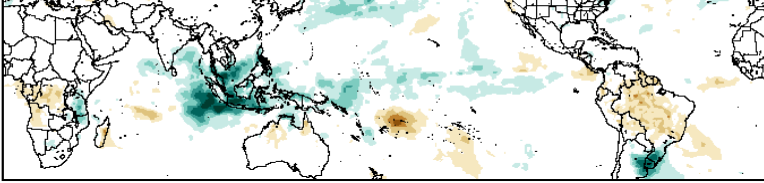
Phase 3



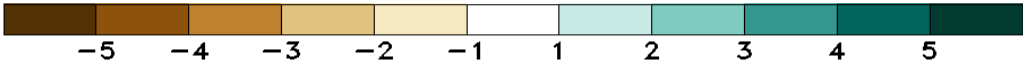
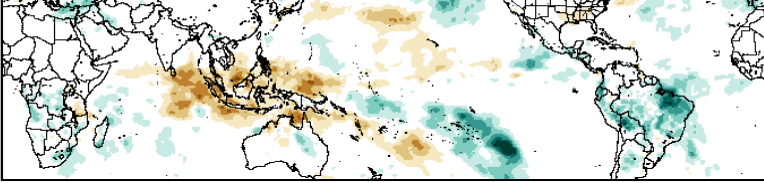
Phase 7



Phase 4

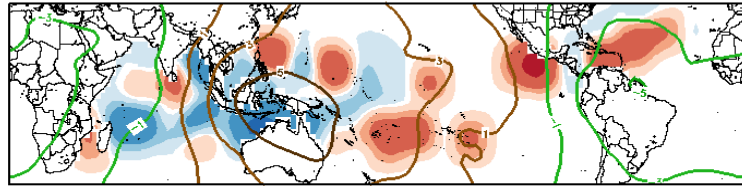


Phase 8

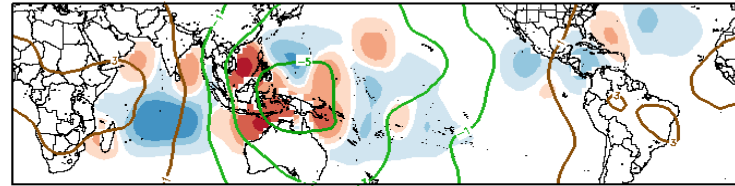


# Historical TC Origin Anomalies By MJO Phase & Weeks 2+3 Genesis Climo:

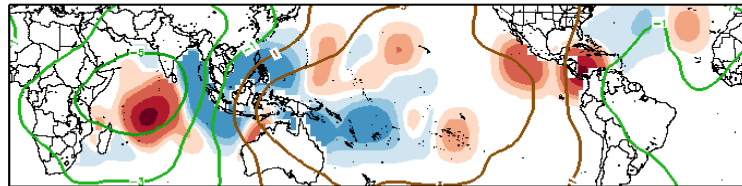
NDJ MJO Composite: Mean TC Origin Density Anomaly ( $\#TCs/277km^2*100$ )  
w/ NDJ CHI200 ( $\times 10^6 m^2 s^{-1}$ ) / Contours every  $2 \times 10^6 m^2 s^{-1}$



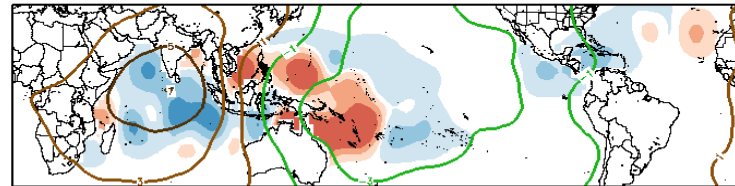
Phase 1



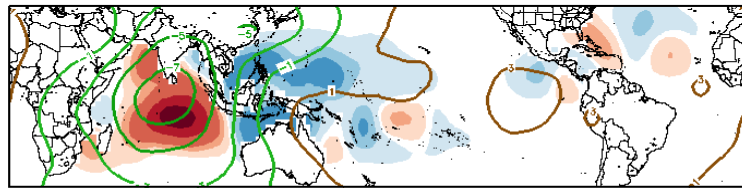
Phase 5



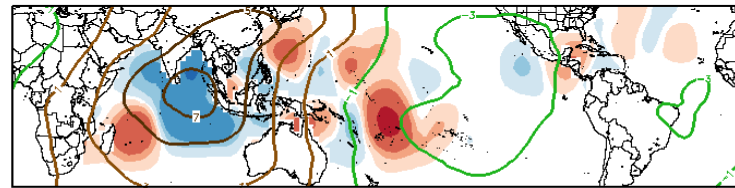
Phase 2



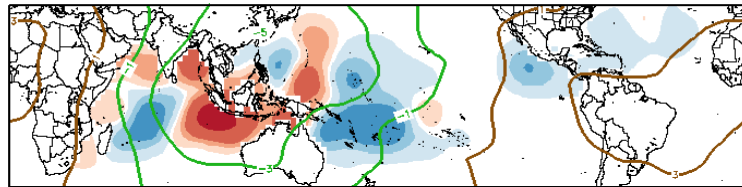
Phase 6



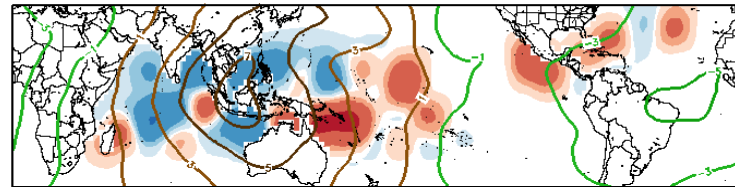
Phase 3



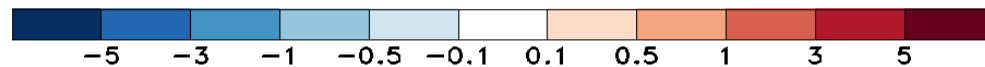
Phase 7



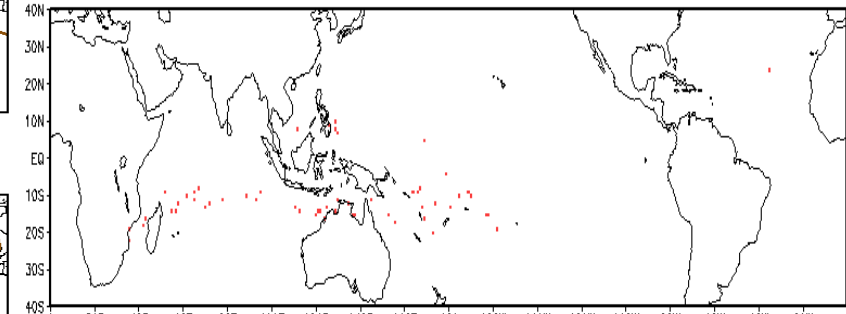
Phase 4



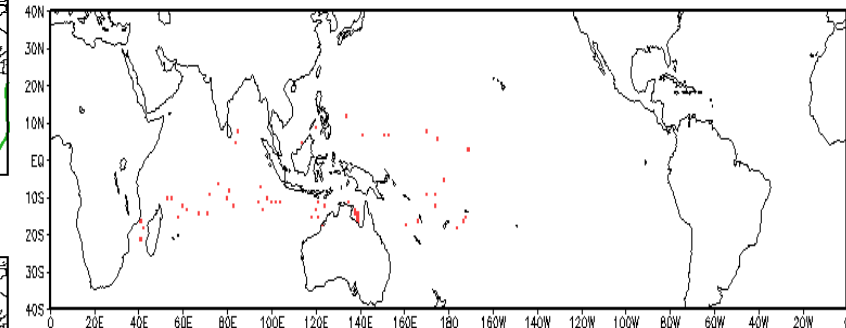
Phase 8



Observed TC Genesis, 1979-2021  
7-day Period 1227 to 0102



Observed TC Genesis, 1979-2021  
7-day Period 0103 to 0109

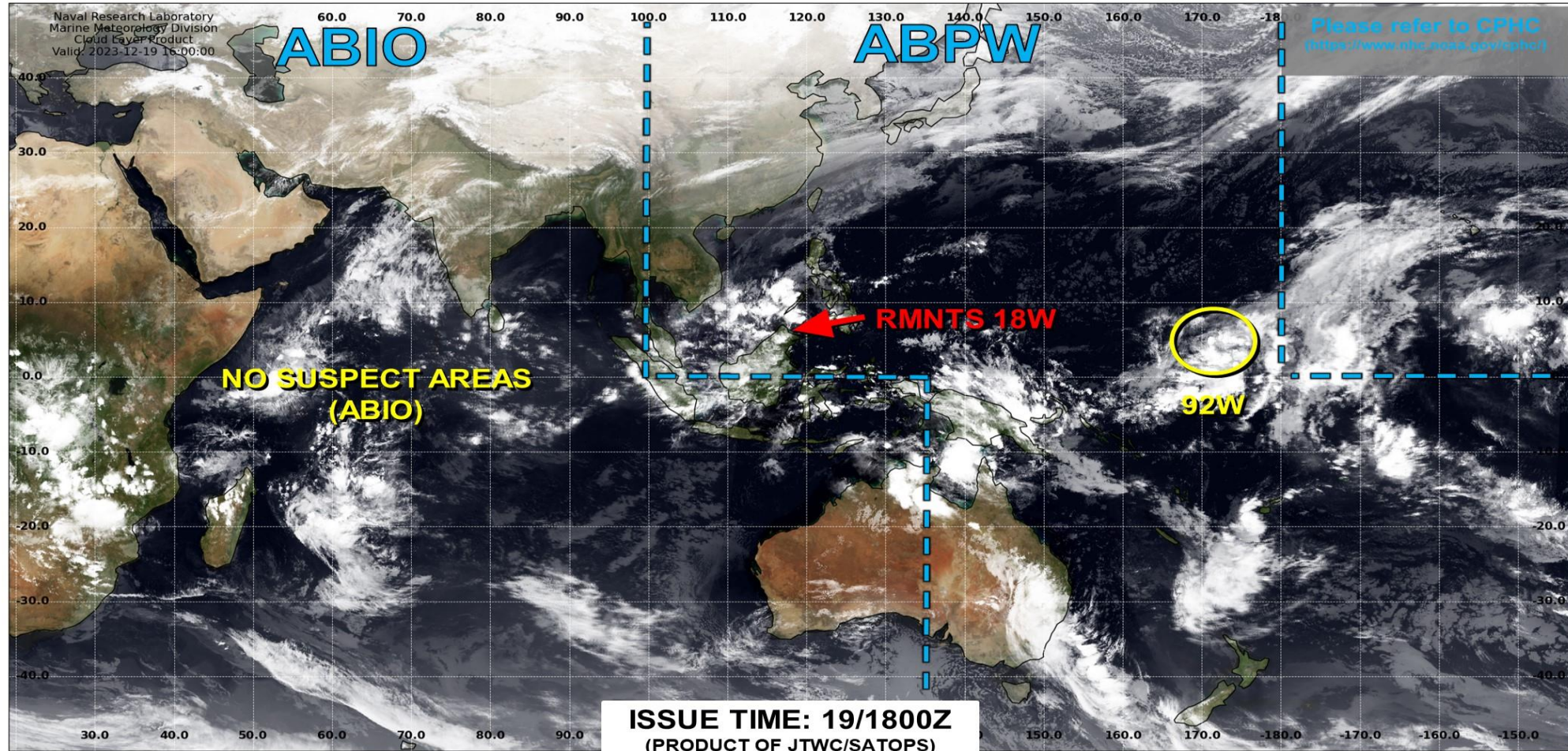


\*Experimental\*

# 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)



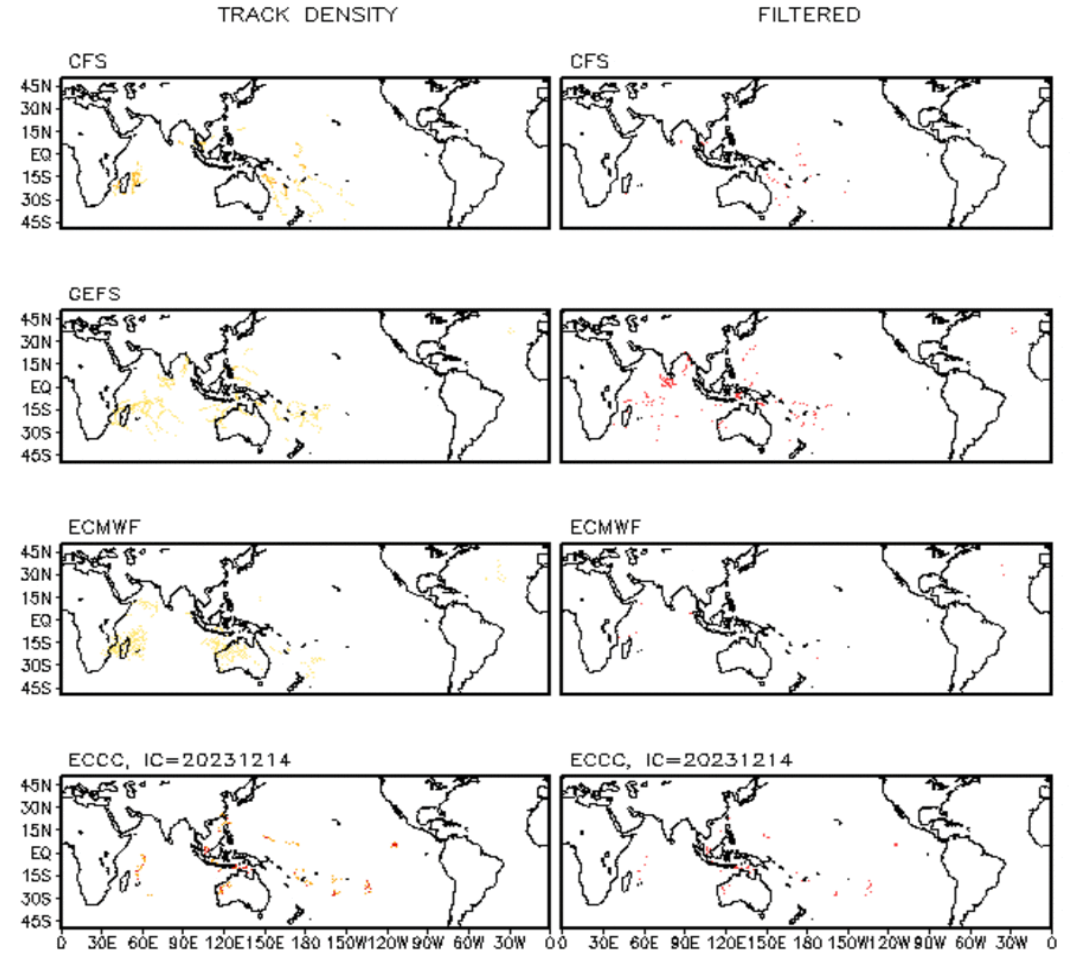
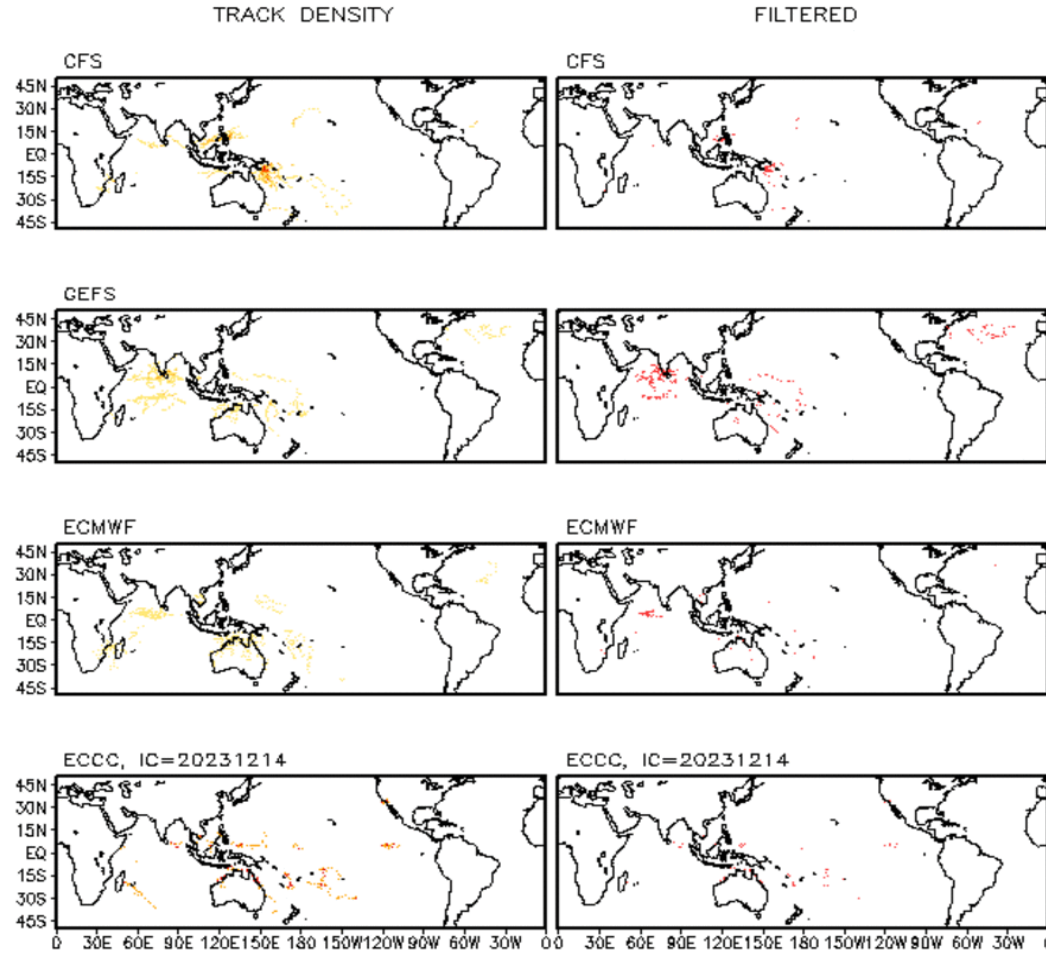
Monitoring for potential transition to TC. Invest label color denotes tropical transition probability



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

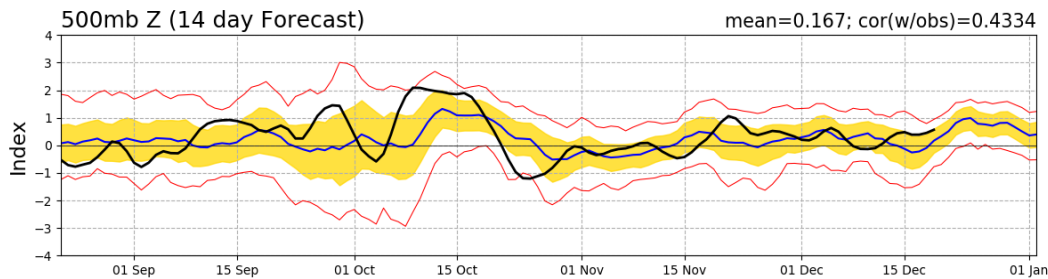
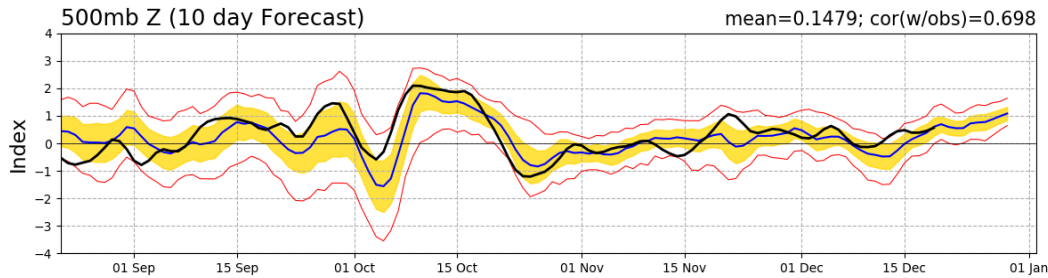
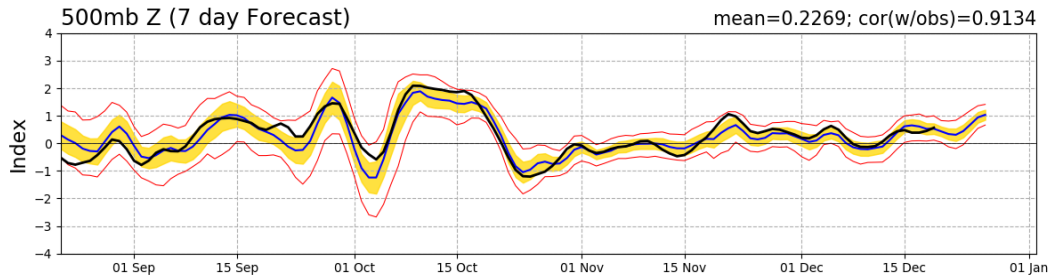
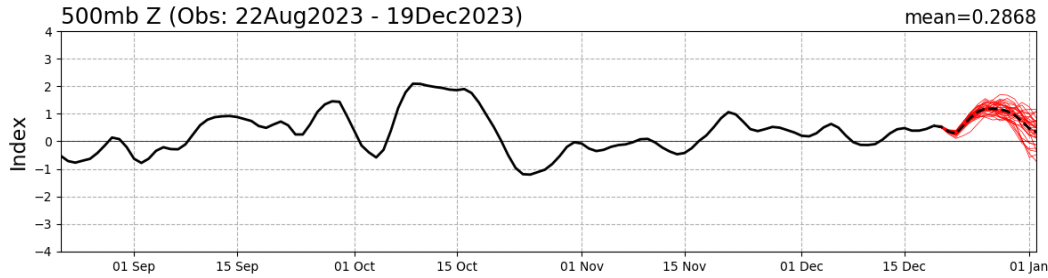
Storm Track Density Distribution, IC=20231218  
Week 2 Forecast: 1227-0102

Storm Track Density Distribution, IC=20231218  
Week 3 Forecast: 0103-0109

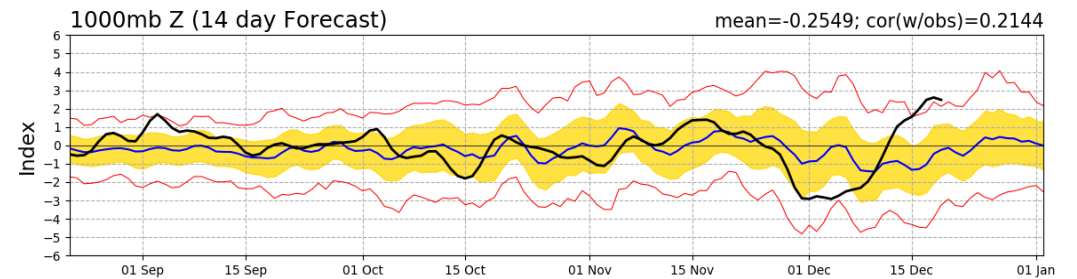
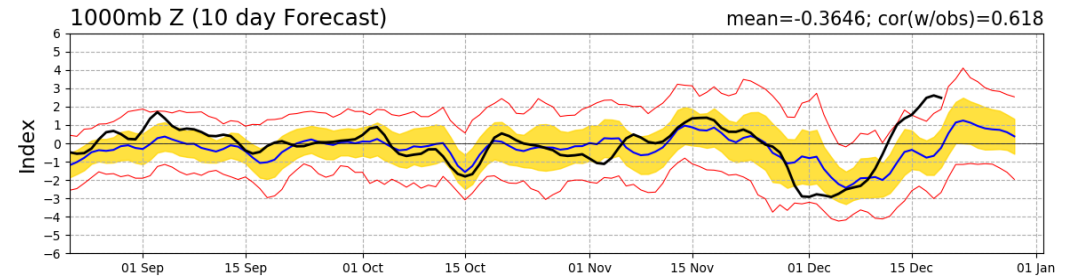
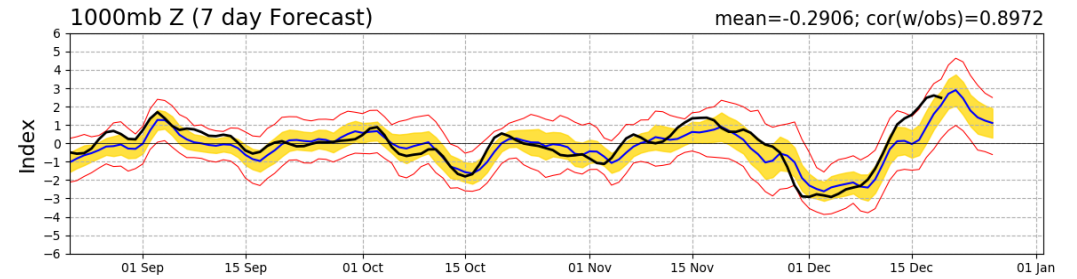
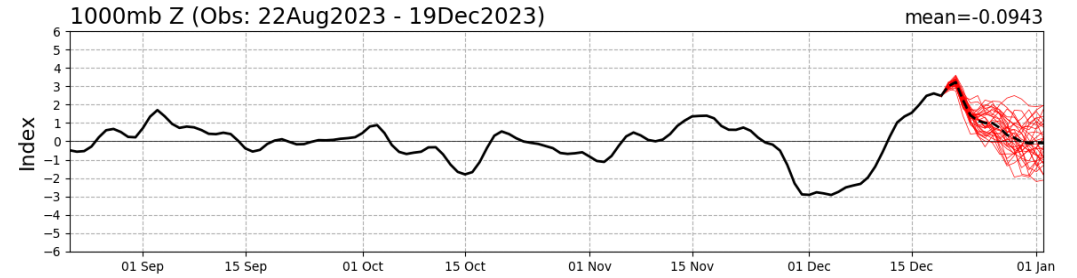


# Teleconnection Indices: PNA / AO:

## PNA Index: Observed & GEFS Forecasts

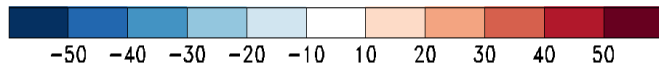
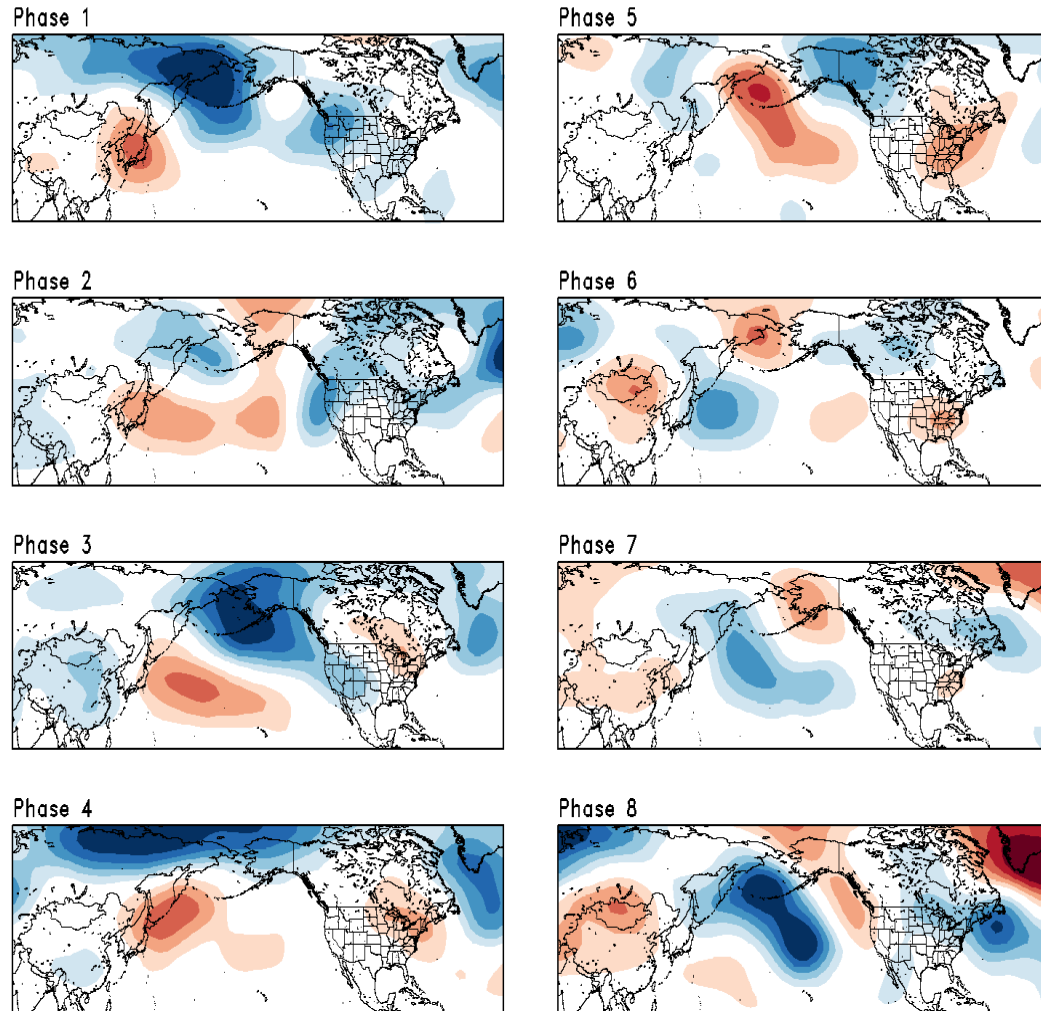


## AO Index: Observed & GEFS Forecasts

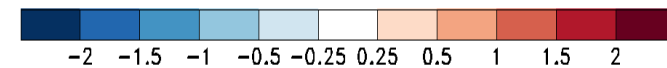
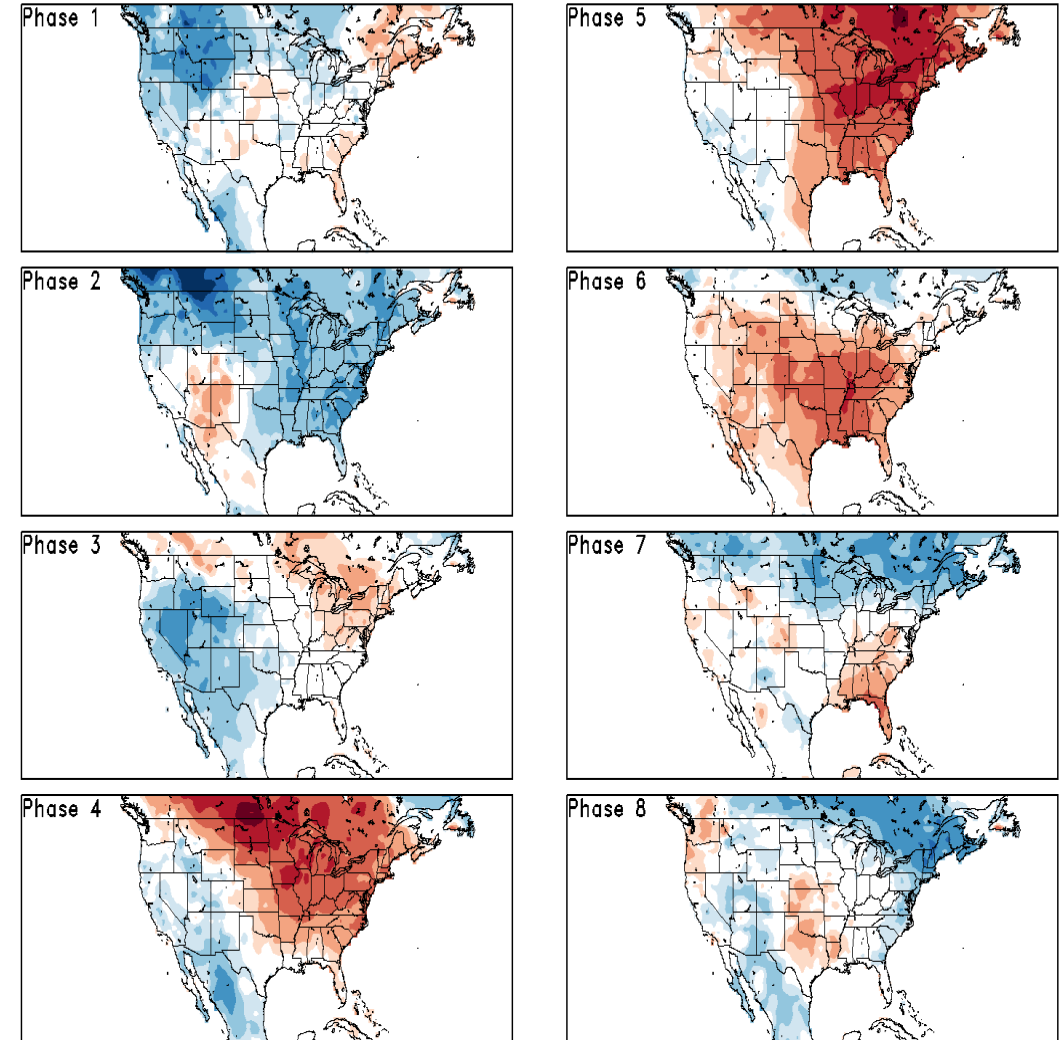


# Historical 500-hPa Height & U.S. Temperatures By MJO Phase:

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

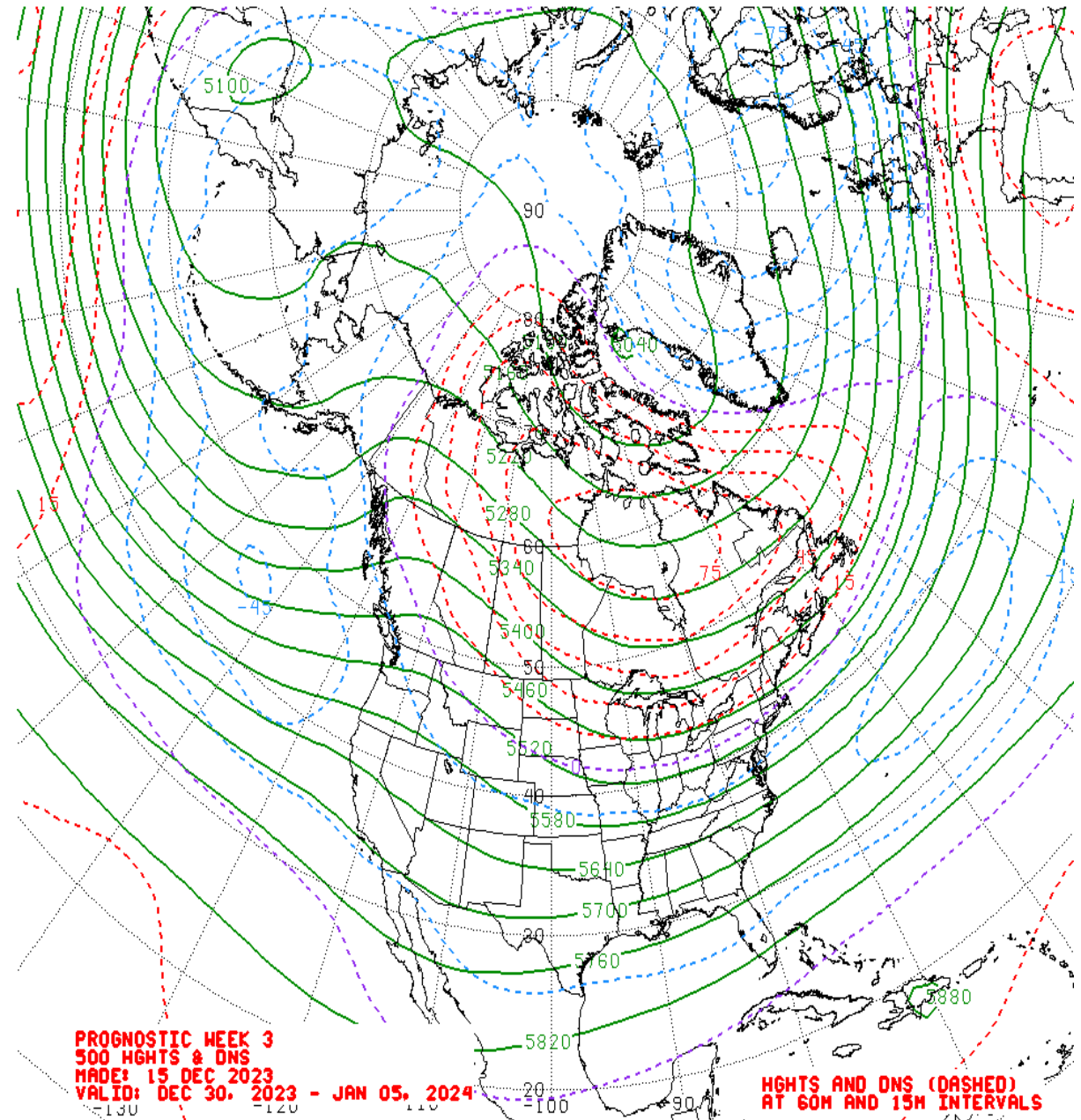
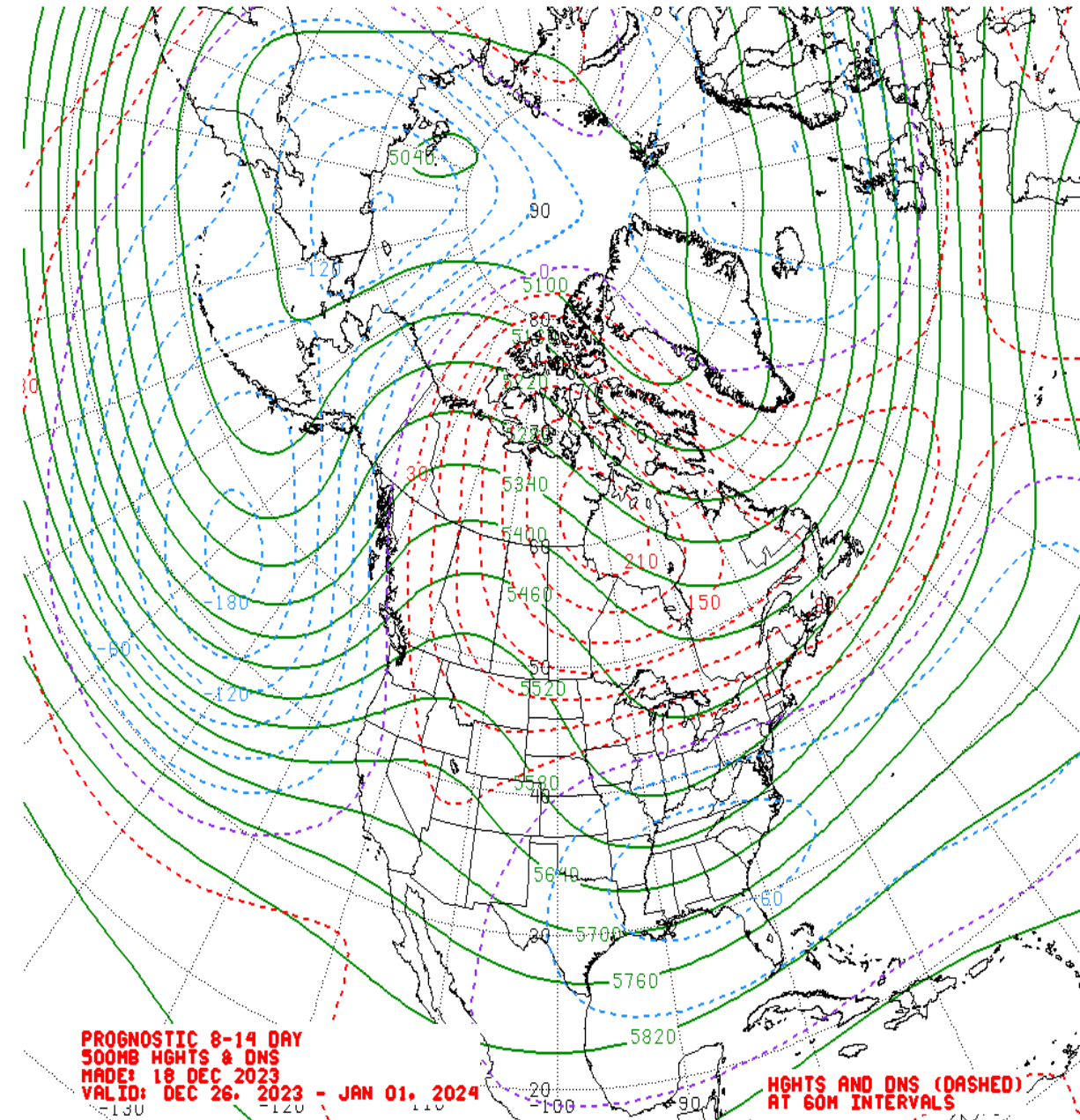


NDJ MJO Composite: GLBT (degC)

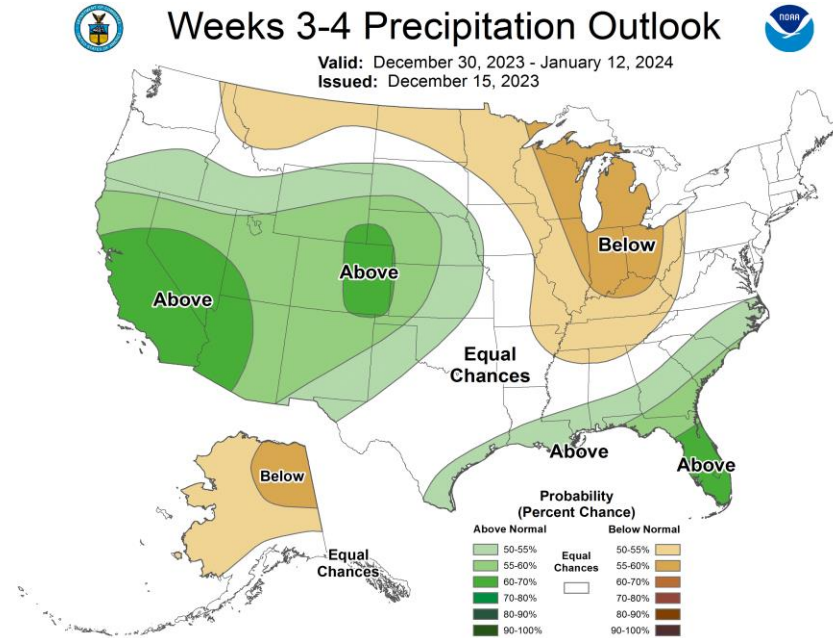
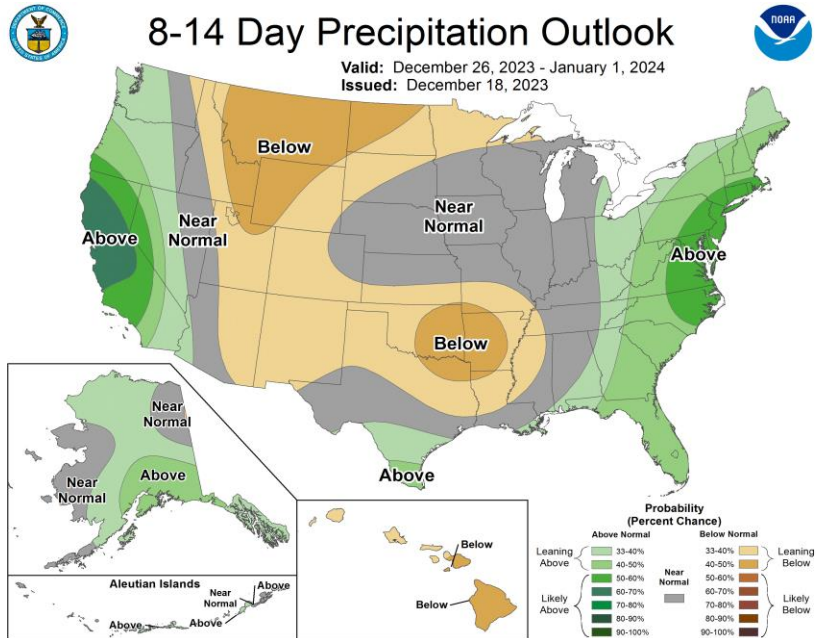
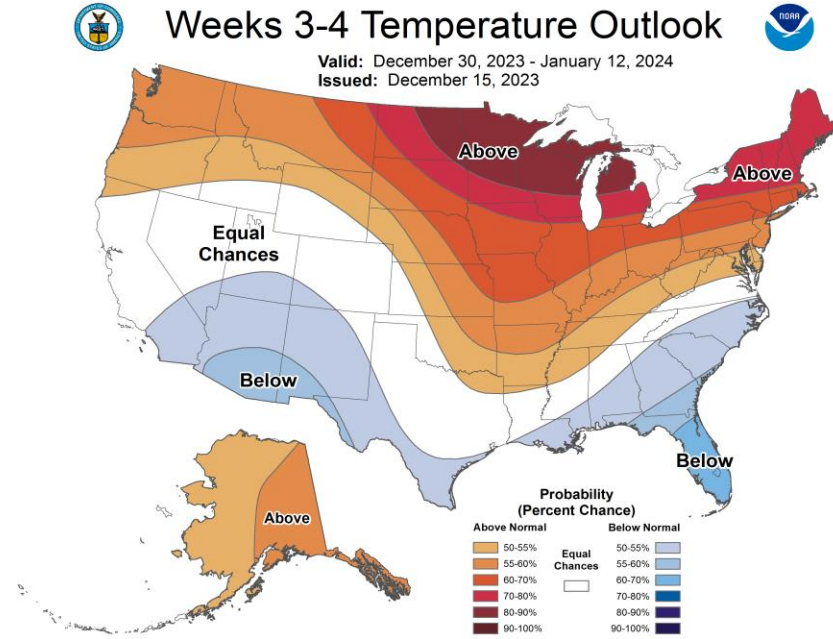
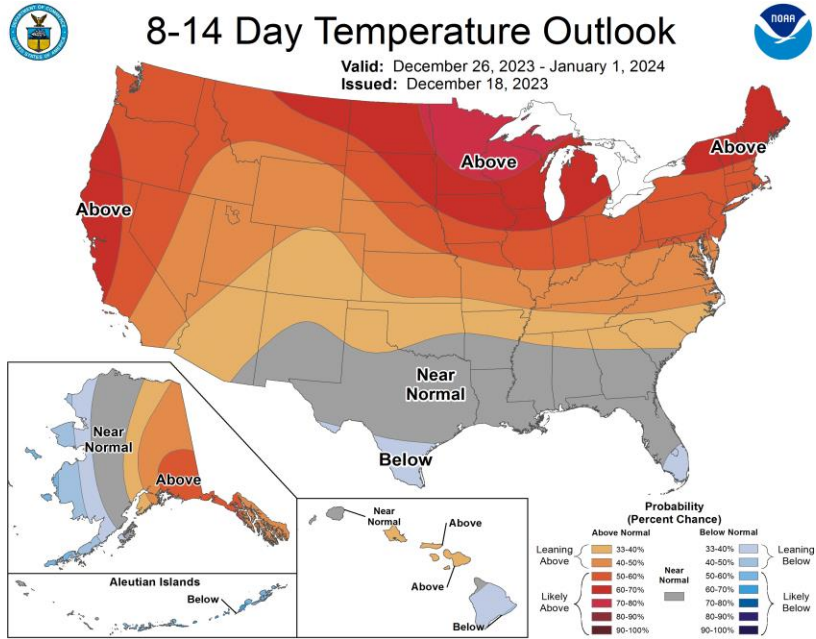




# Mean 500-hPa Height Anomaly Forecasts: Weeks 2+3



# Official Temperature & Precipitation Forecasts:



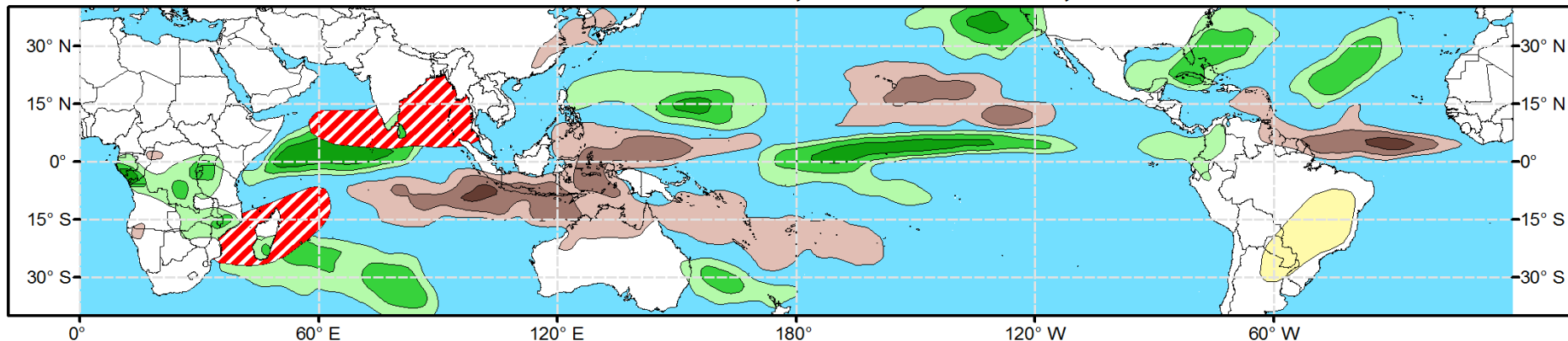


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Climate Prediction Center

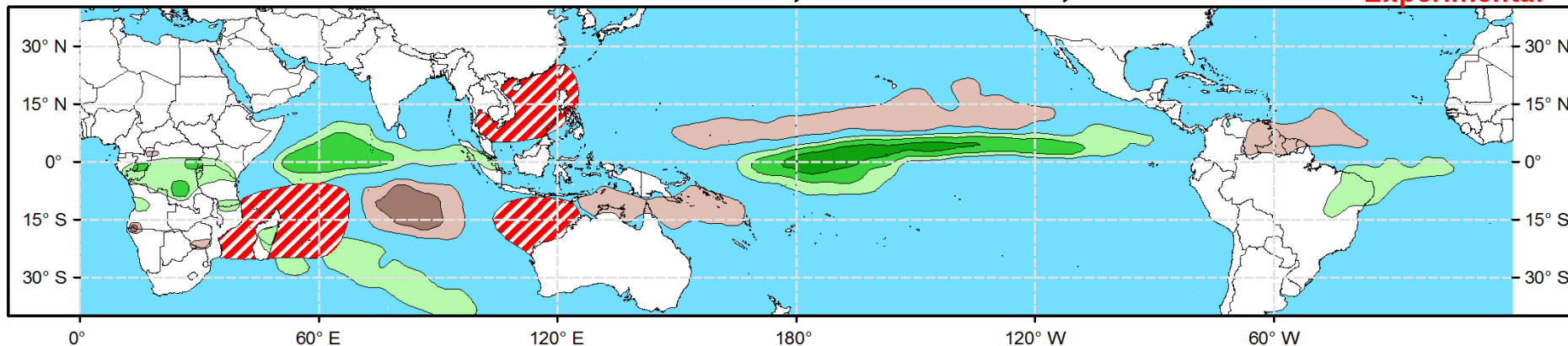


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