



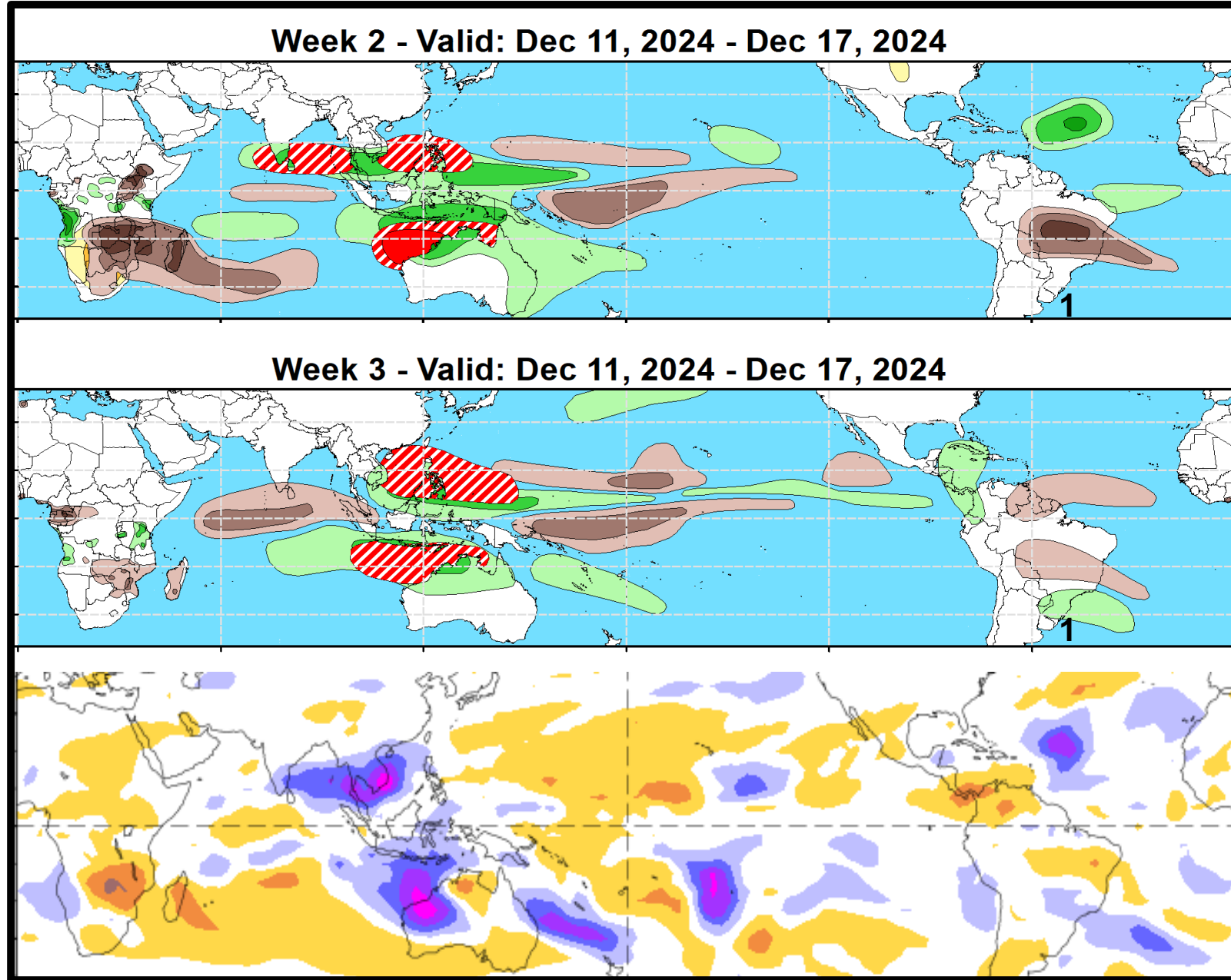
Weeks 2-3 Global Tropics Hazards Outlook

12/17/2024

Danny Barandiaran
NWS / NCEP / Climate Prediction Center

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

- 1: Bigua, Dec 15
- TC development imminent east of the Philippines



Synopsis of Climate Modes:

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

- ENSO Alert System Status: [La Niña Advisory](#)
- 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:

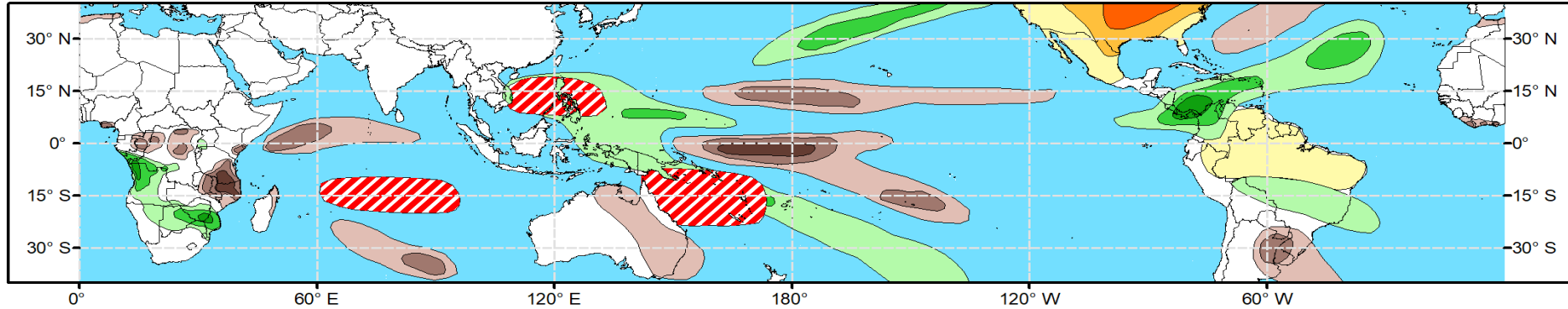
- The MJO has continued to be a significant player in the tropics. However, the emerging La Niña base state has been a growing source of interference with both the propagation and amplitude of the MJO.
- Dynamical model forecasts depict continued eastward propagation of the MJO signal with a slow phase. Extended range RMM-index solutions indicate the potential for a surge in the strength of the MJO during weeks 3&4 as it moves out into the Central Pacific and La Niña interference lessens.
- A continued eastward MJO propagation over the Pacific would favor a period of below-normal temperatures across the northeastern U.S. to start off the New Year, as well as a wet start for the West Coast.



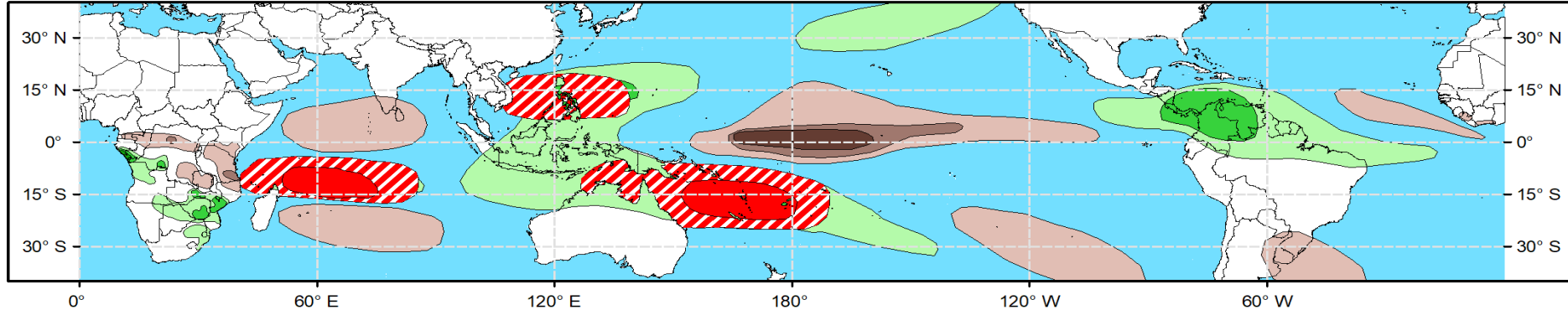
Global Tropics Hazards Outlook Climate Prediction Center



Week 2 - Valid: Dec 25, 2024 - Dec 31, 2024



Week 3 - Valid: Jan 01, 2025 - Jan 07, 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**



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*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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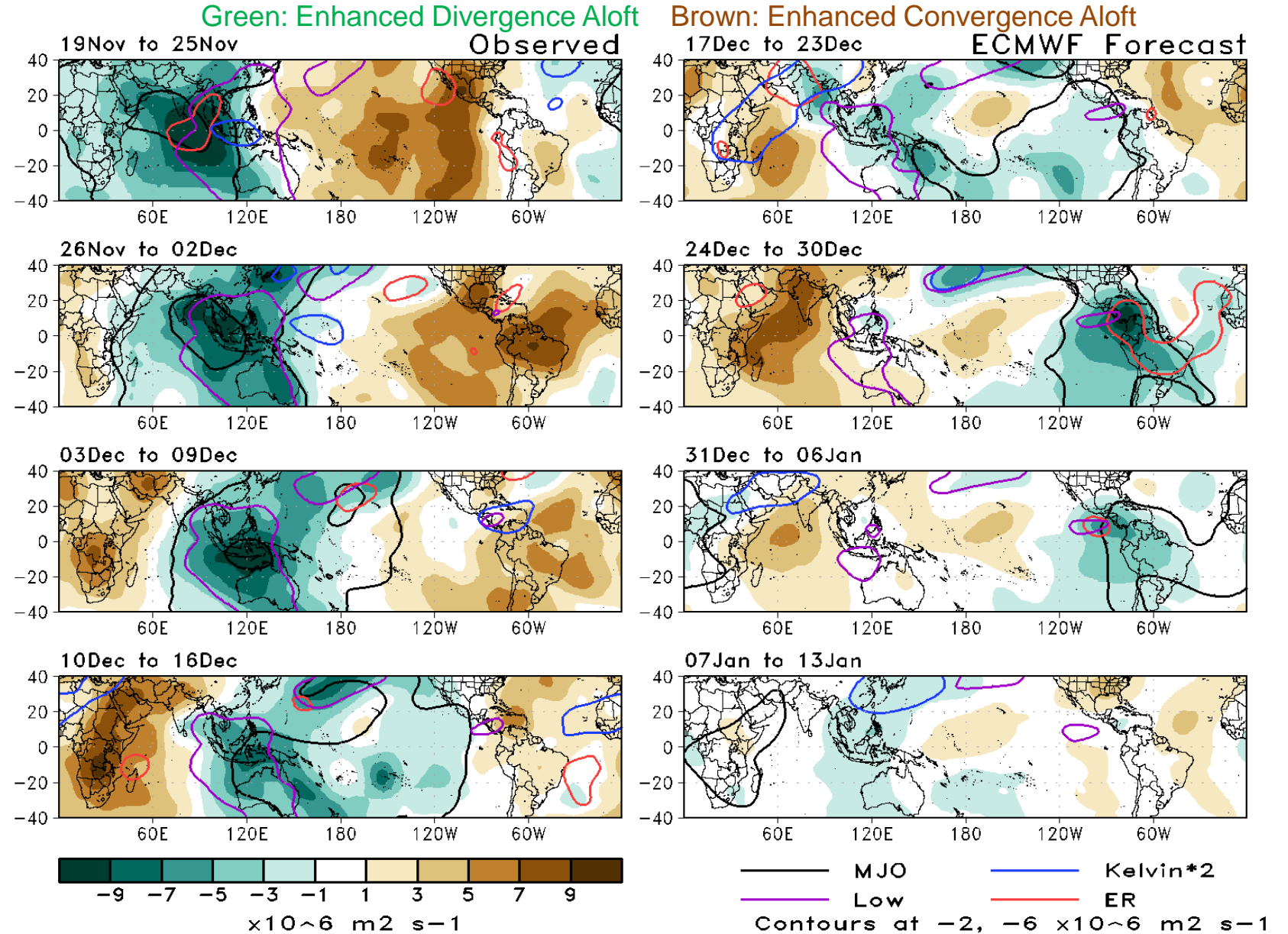
Issued: 12/17/2024

Forecaster: Barandiaran

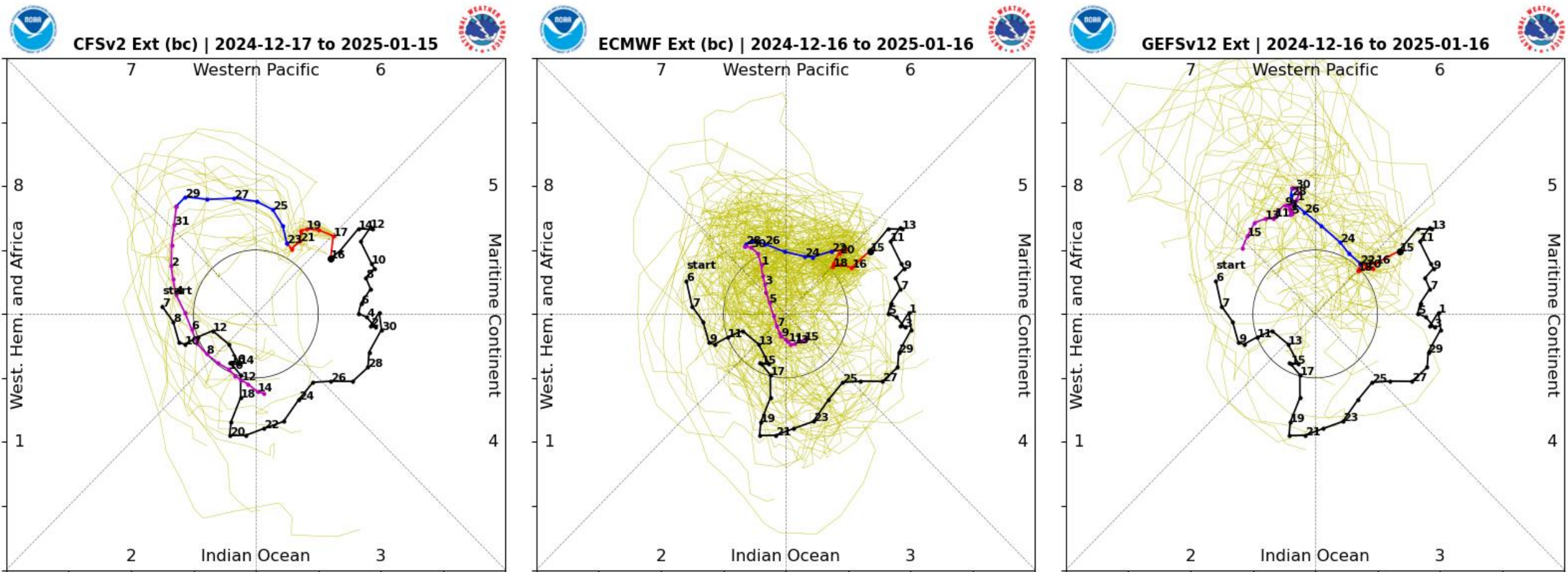
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200-hPa Velocity Potential Anomaly Maps:

- Strong MJO activity is noted over the last month with a clear and amplified wave-1 asymmetry moving from the Indian Ocean into the Western Pacific.
- Looking ahead, other models are generally in good agreement with the ECMWF forecast to the right, with the MJO moving into the Western Hemisphere by week-2 and Africa by week-4.

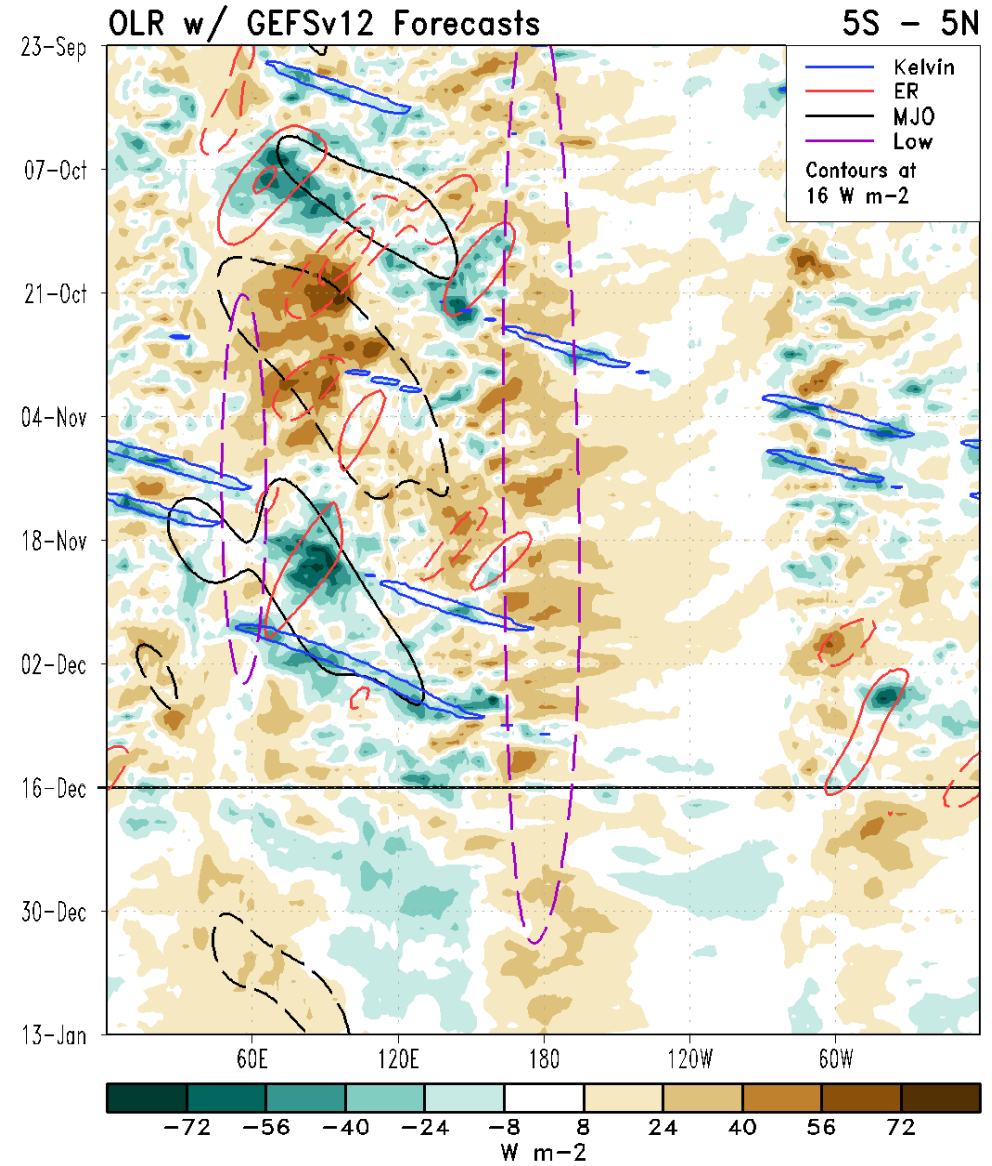
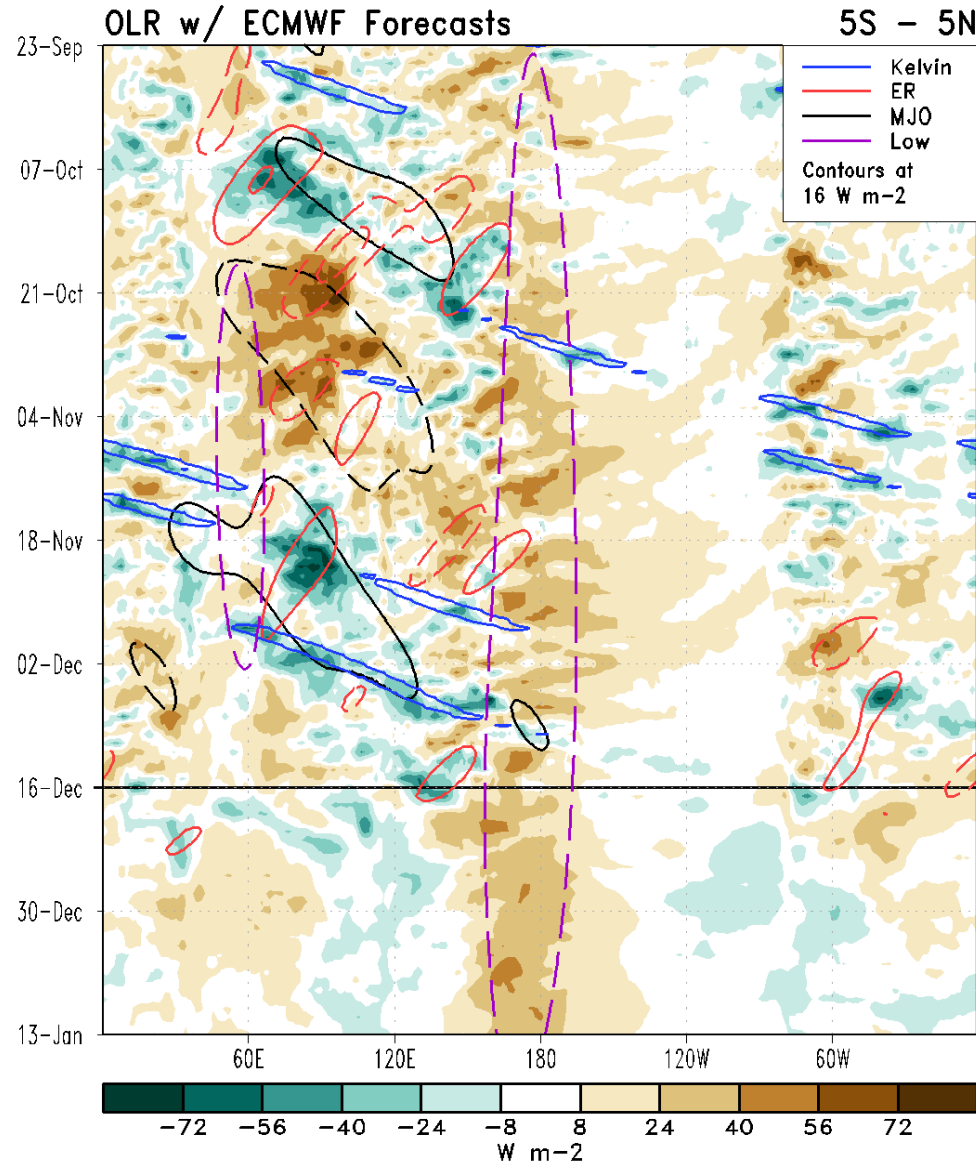


RMM Index Observations & Forecasts:



- RMM index forecasts are a little out of phase with regard to velocity potential forecasts as seen on previous slide, with the index appearing to be right-shifted. This kind of shift can occur during changes to the ENSO regime, complicating RMM interpretation.
- Regardless, model consensus depicts a continuation of MJO activity well into the New Year.

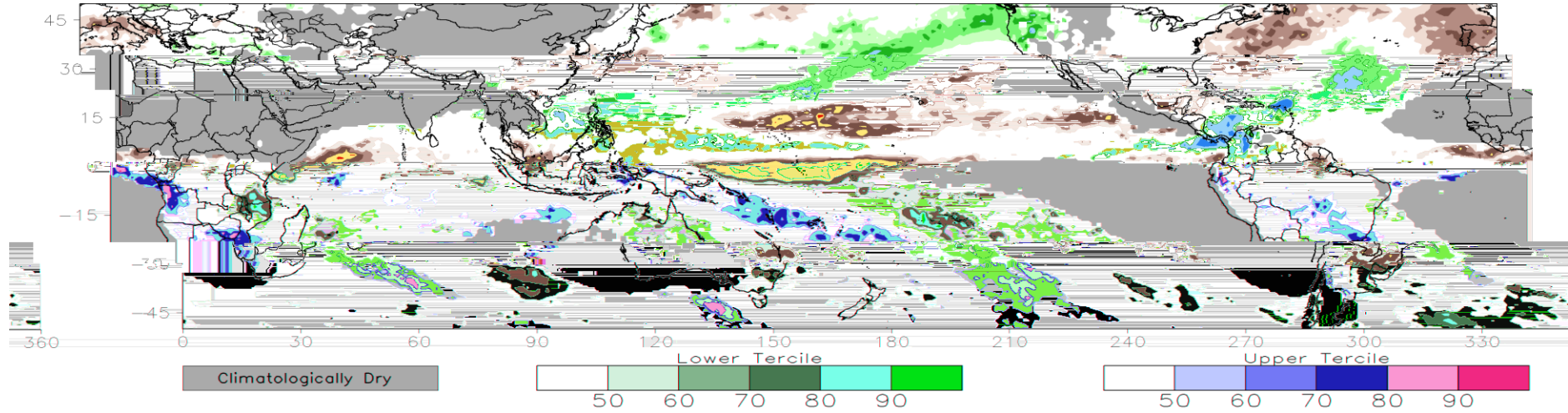
Outgoing Longwave Radiation (OLR) Anomaly Time/Lon Plots:



Consolidated Probabilistic Precipitation: Weeks 2 & 3

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

Valid: 25Dec2024–31Dec2024



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

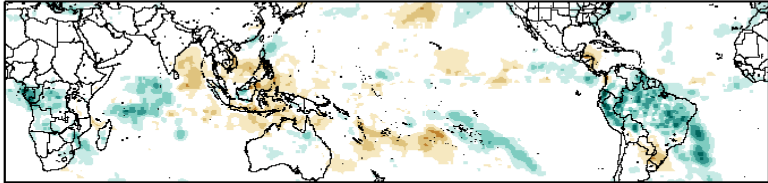
Valid: 01Jan2025–07Jan2025



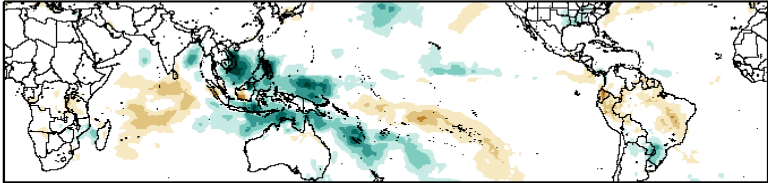
Historical Precipitation Anomalies By MJO Phase:

NDJ MJO Composite: GPCP1DD (mm/day)

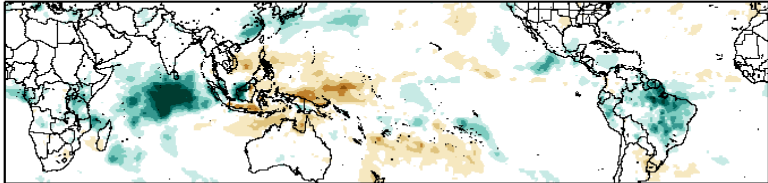
Phase 1



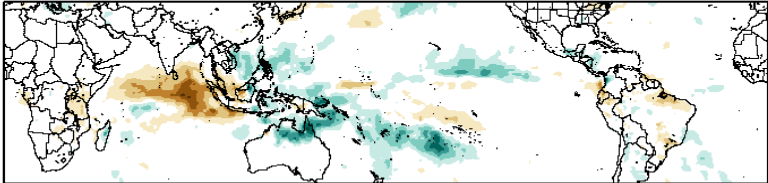
Phase 5



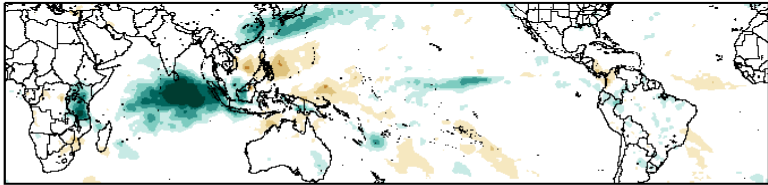
Phase 2



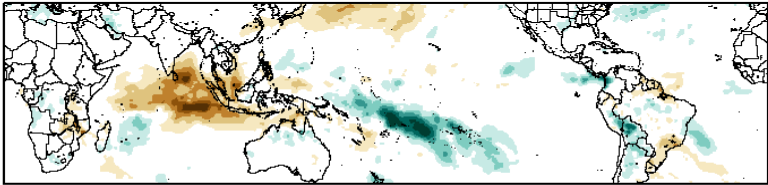
Phase 6



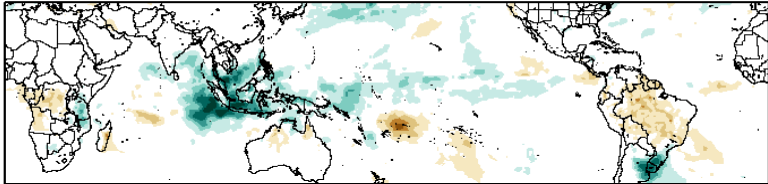
Phase 3



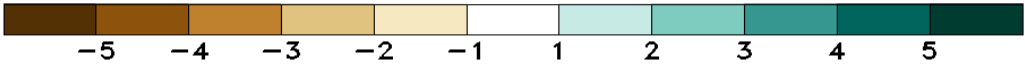
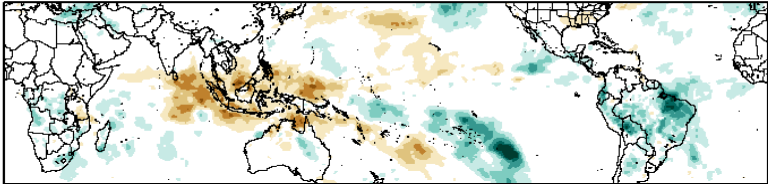
Phase 7



Phase 4

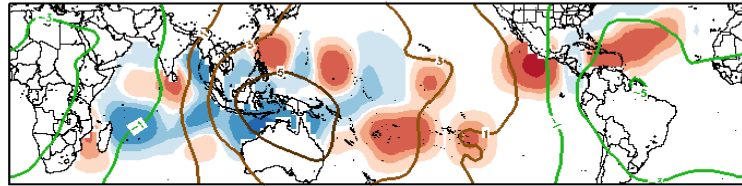


Phase 8

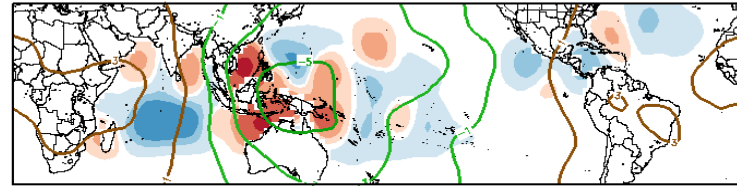


Historical TC Origin Anomalies By MJO Phase & Weeks 2+3 Genesis Climo:

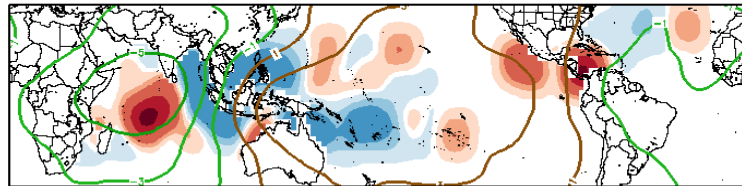
NDJ MJO Composite: Mean TC Origin Density Anomaly ($\#TCs/277km^2*100$)
w/ NDJ CHI200 ($\times 10^6 m^2 s^{-1}$) / Contours every $2 \times 10^6 m^2 s^{-1}$



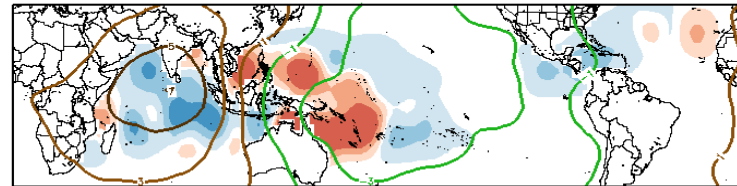
Phase 1



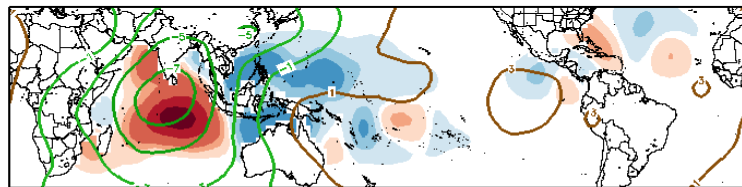
Phase 5



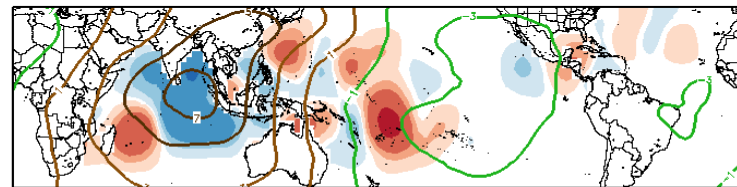
Phase 2



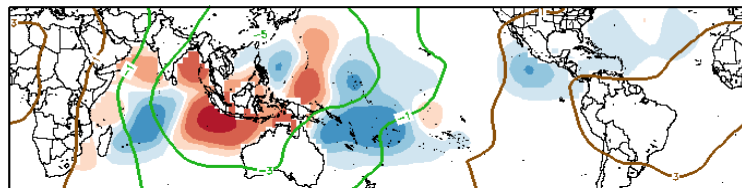
Phase 6



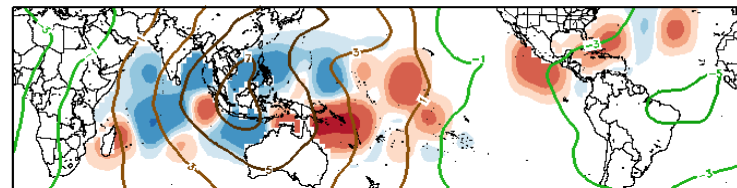
Phase 3



Phase 7

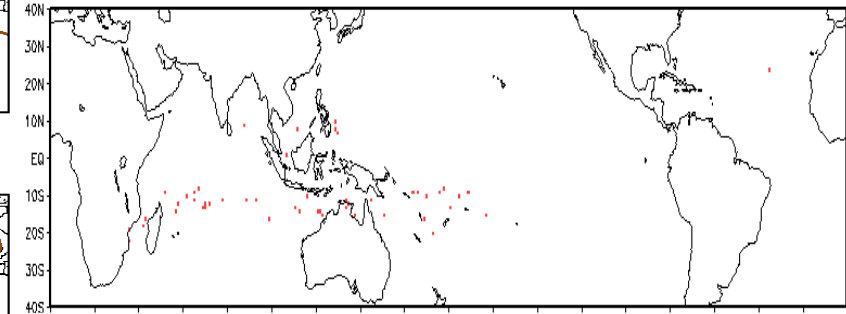


Phase 4

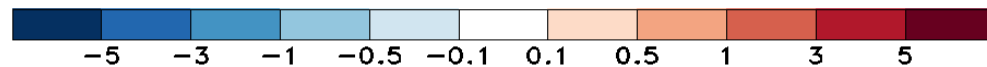
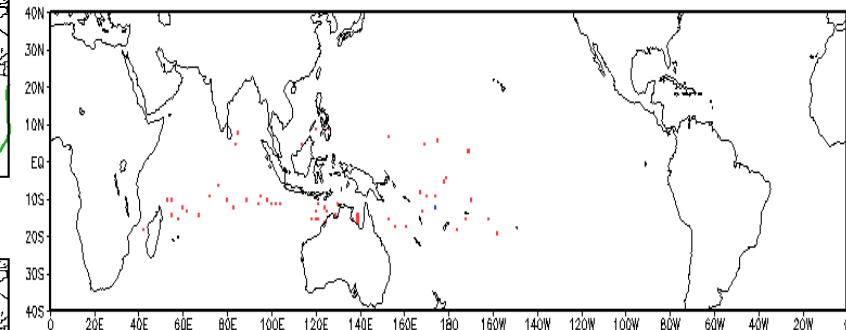


Phase 8

Observed TC Genesis, 1979-2021
7-day Period 1225 to 1231

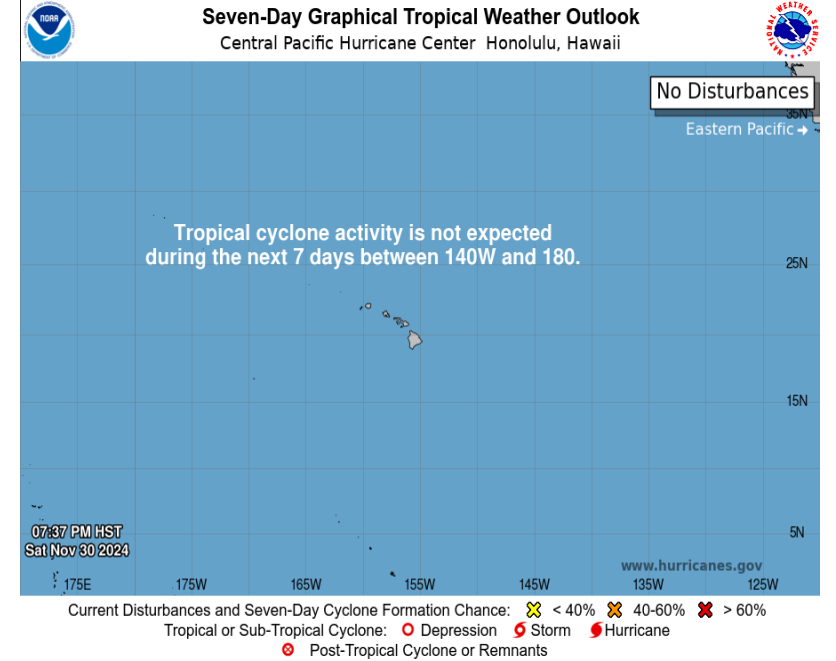
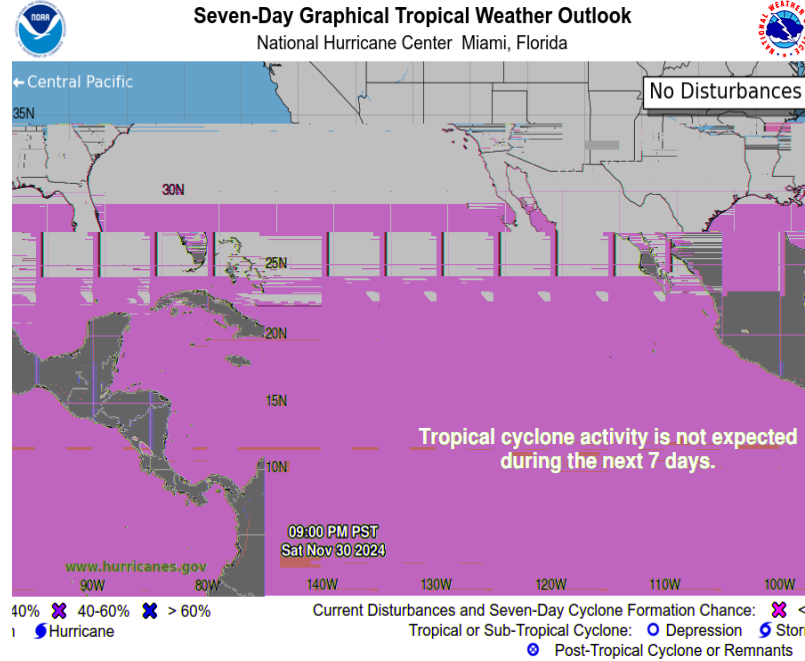
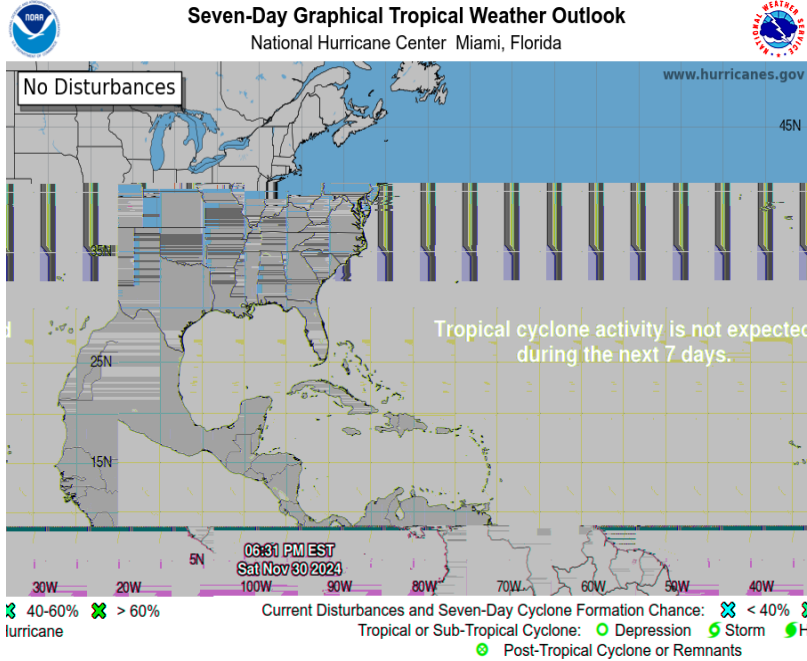


Observed TC Genesis, 1979-2021
7-day Period 0101 to 0107



Experimental

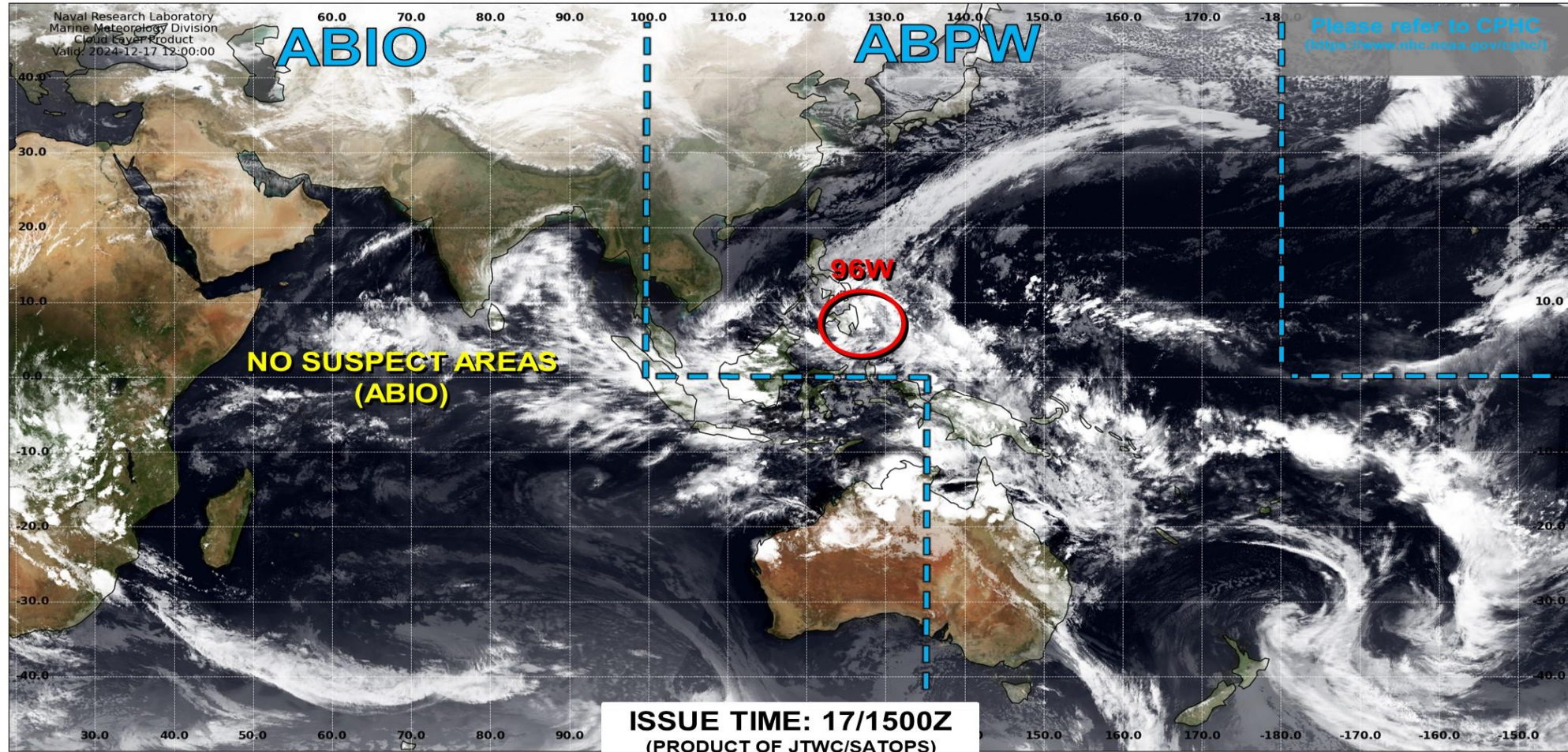
Tropical Cyclone Monitoring/Forecast: NHC / CPHC



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=20241216

Week 2 Forecast: 1225-1231

Storm Track Density Distribution, IC=20241216

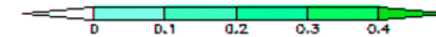
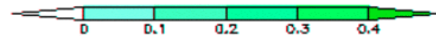
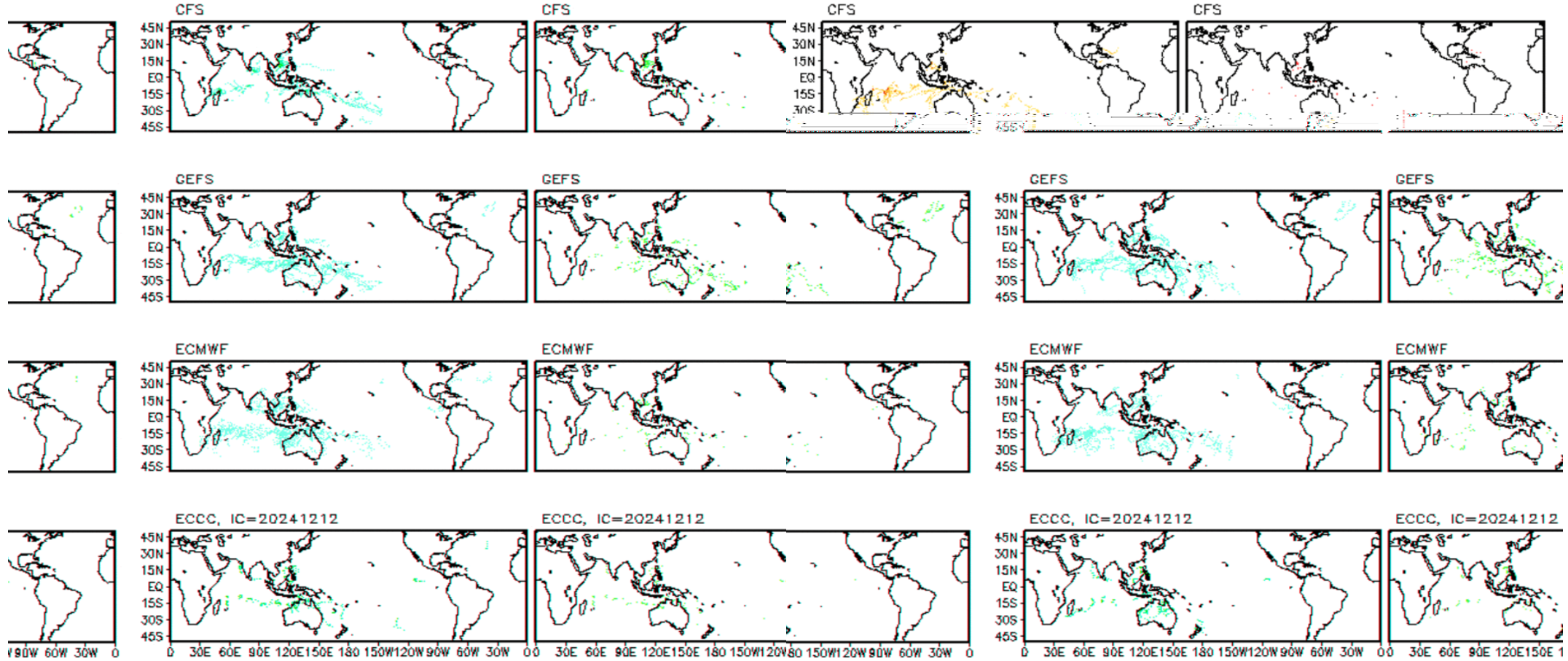
Week 3 Forecast: 0101-0107

TRACK DENSITY

FILTERED

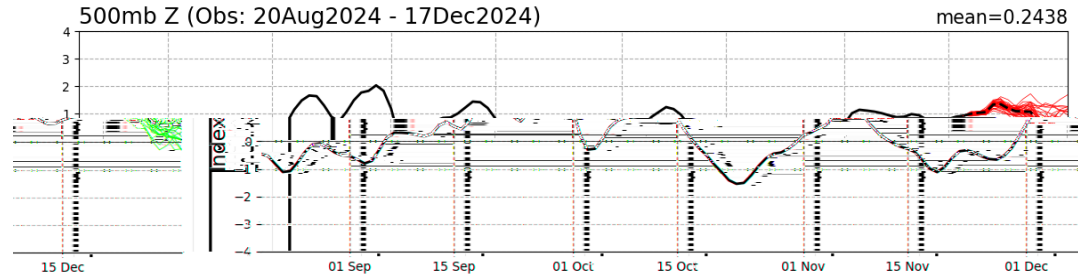
TRACK DENSITY

FILTERED

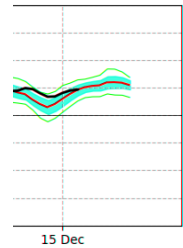


Teleconnection Indices: PNA / AO:

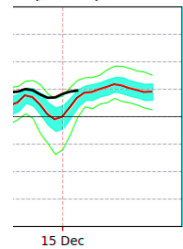
PNA Index: Observed & GEFS Forecasts



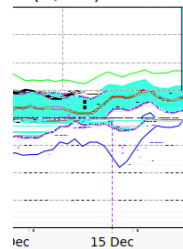
or(w/obs)=0.9166



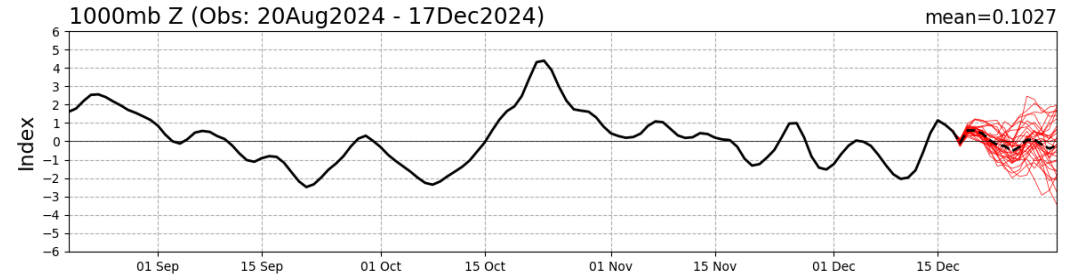
or(w/obs)=0.7839



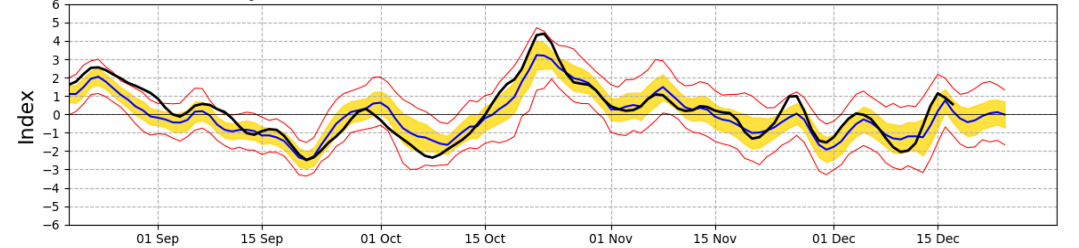
or(w/obs)=0.6212



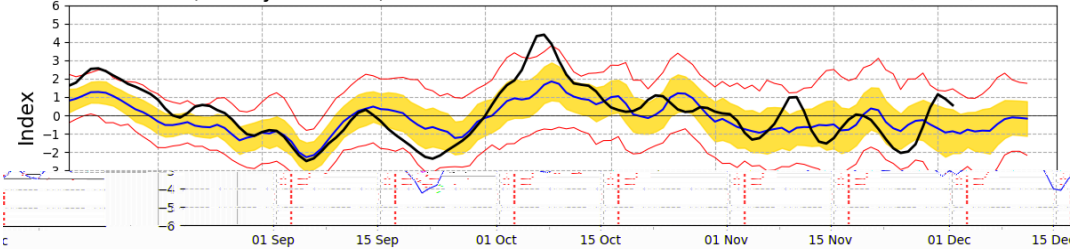
AO Index: Observed & GEFS Forecasts



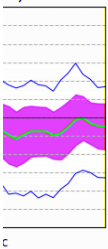
1000mb Z (7 day Forecast) mean=-0.0761; cor(w/obs)=0.9309



1000mb Z (10 day Forecast) mean=-0.1416; cor(w/obs)=0.7794

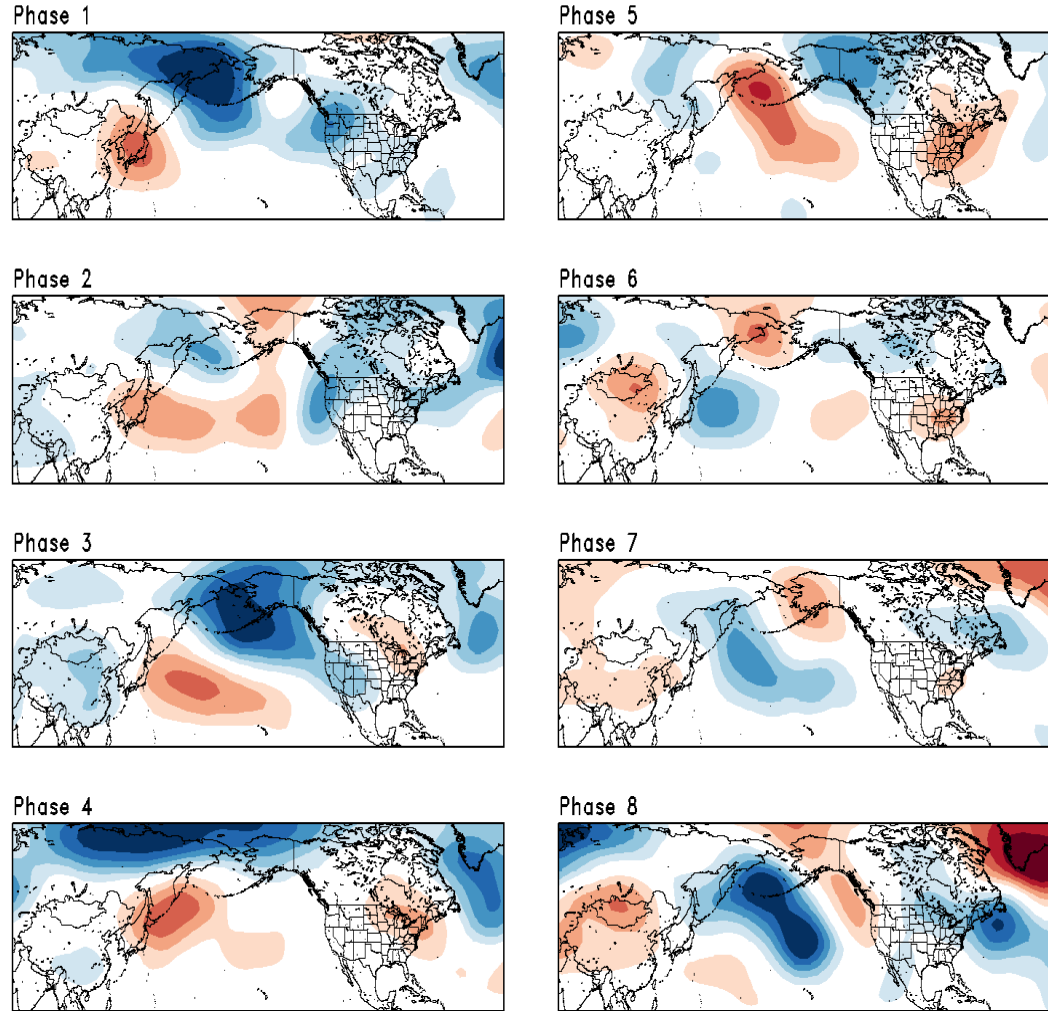


or(w/obs)=0.6033

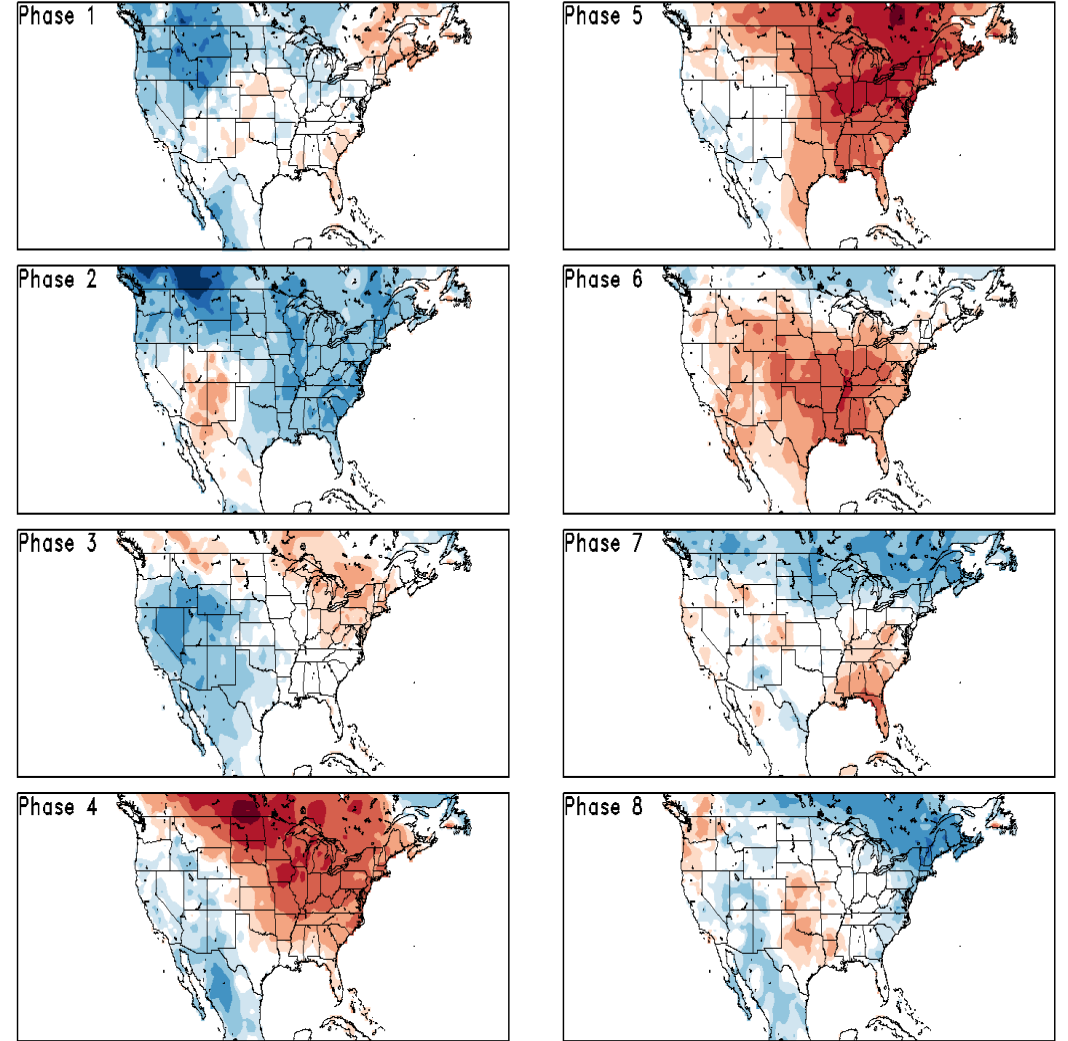


Historical 500-hPa Height & U.S. Temperatures By MJO Phase:

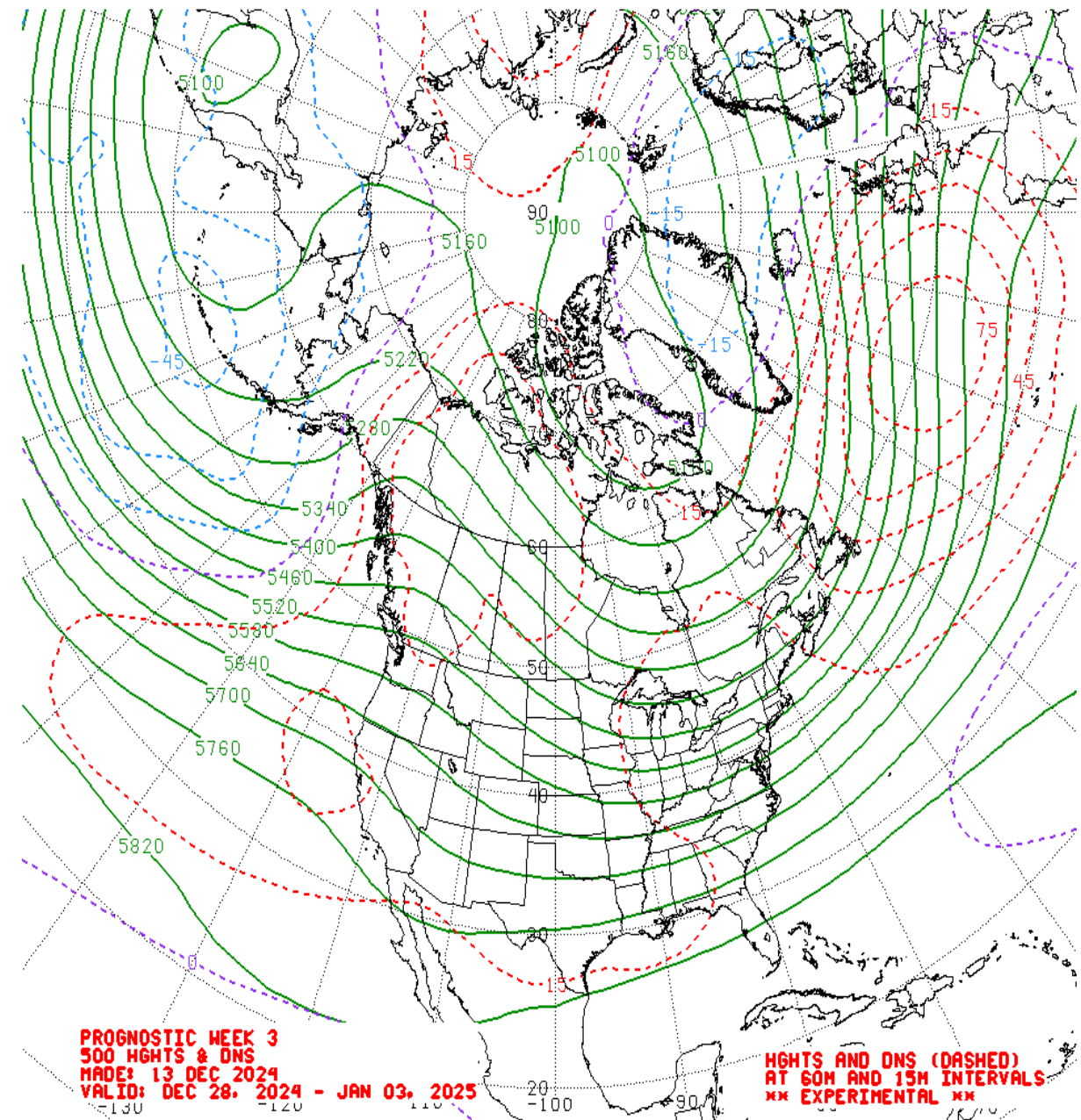
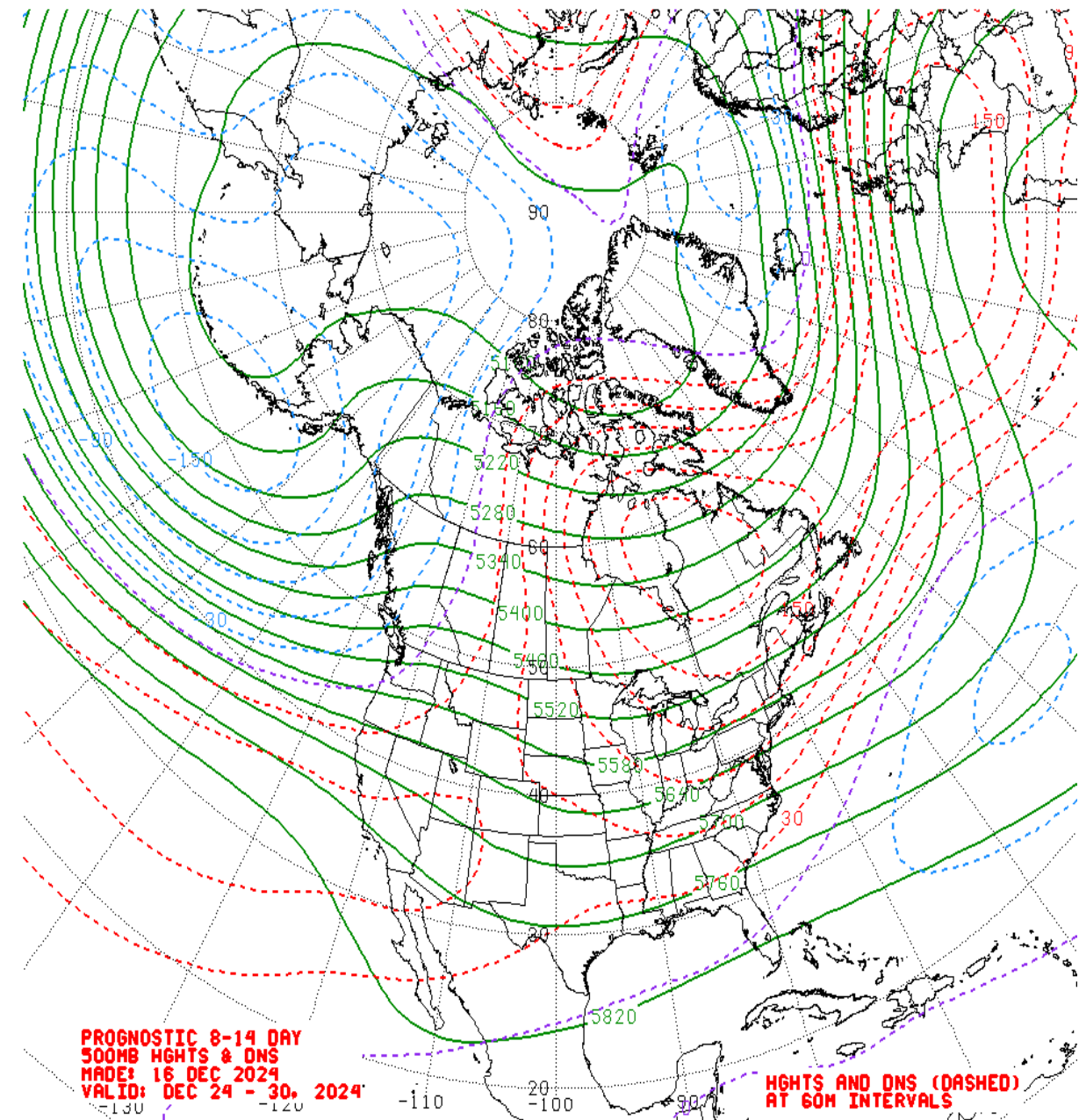
NDJ MJO Composite: CDAS 500-hPa Height (m)



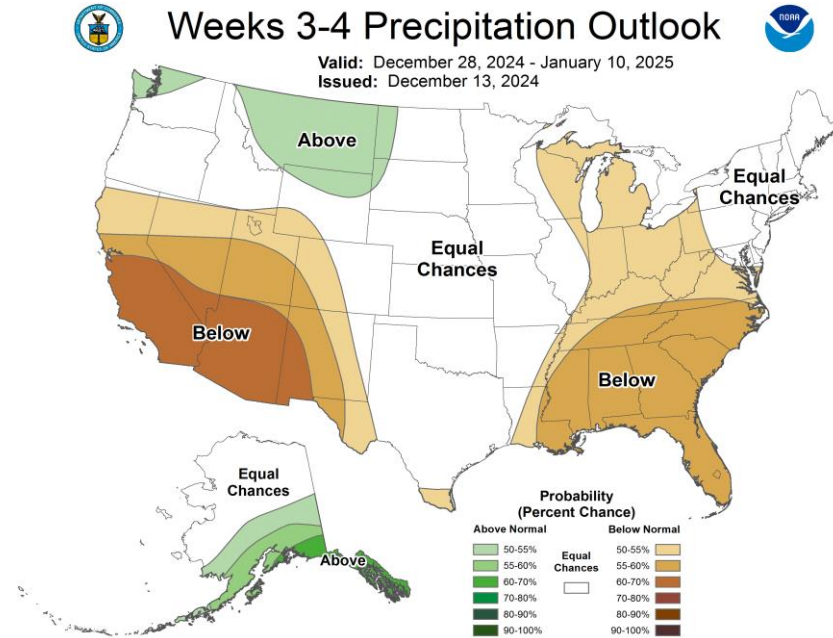
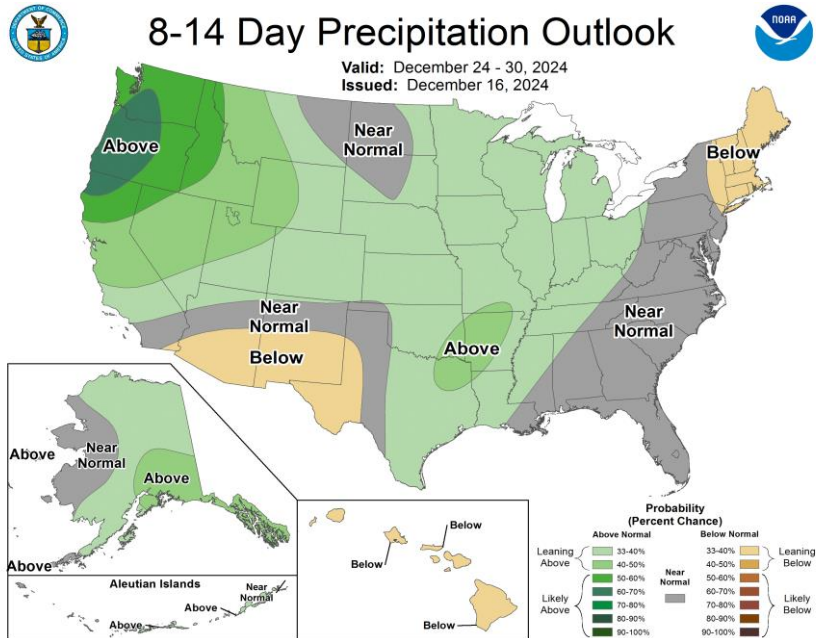
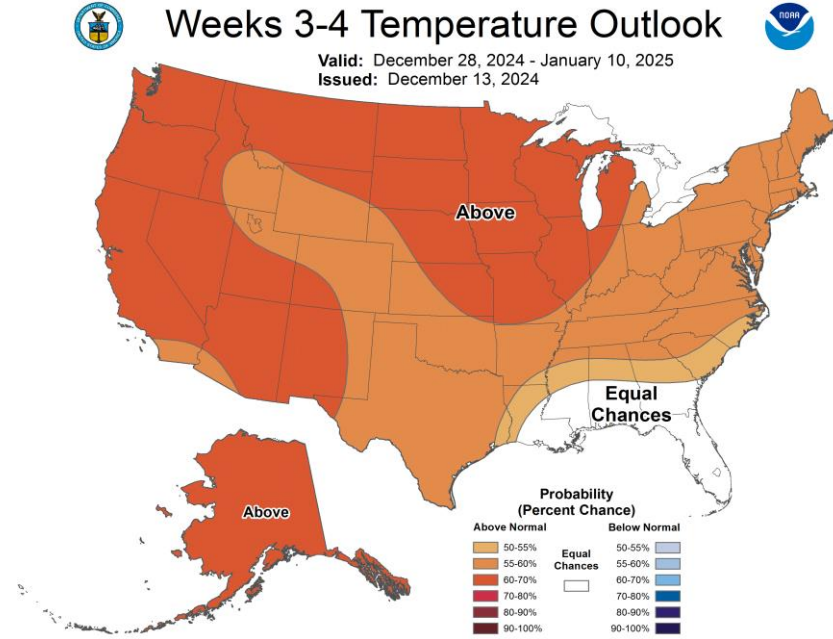
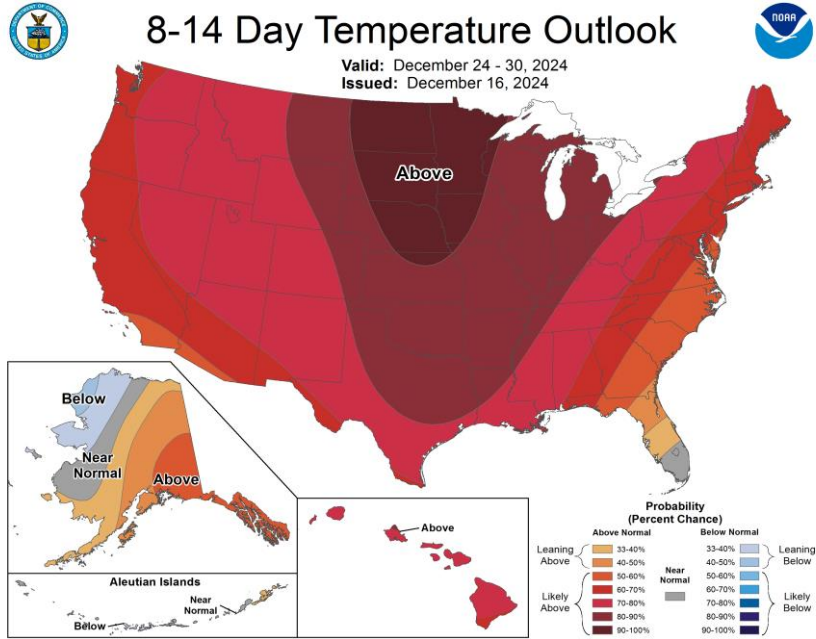
NDJ MJO Composite: GLBT (degC)



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



Official Temperature & Precipitation Forecasts:



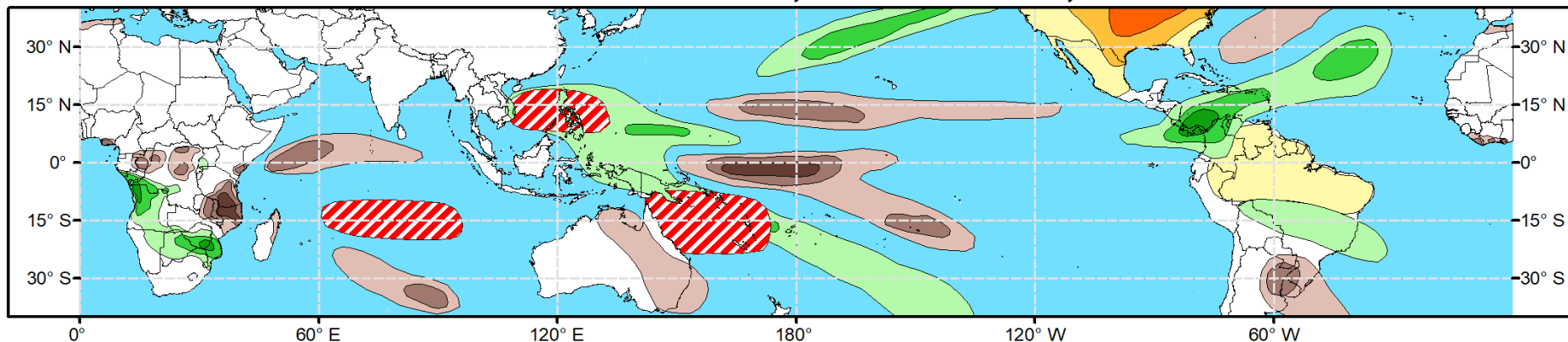


Global Tropics Hazards Outlook

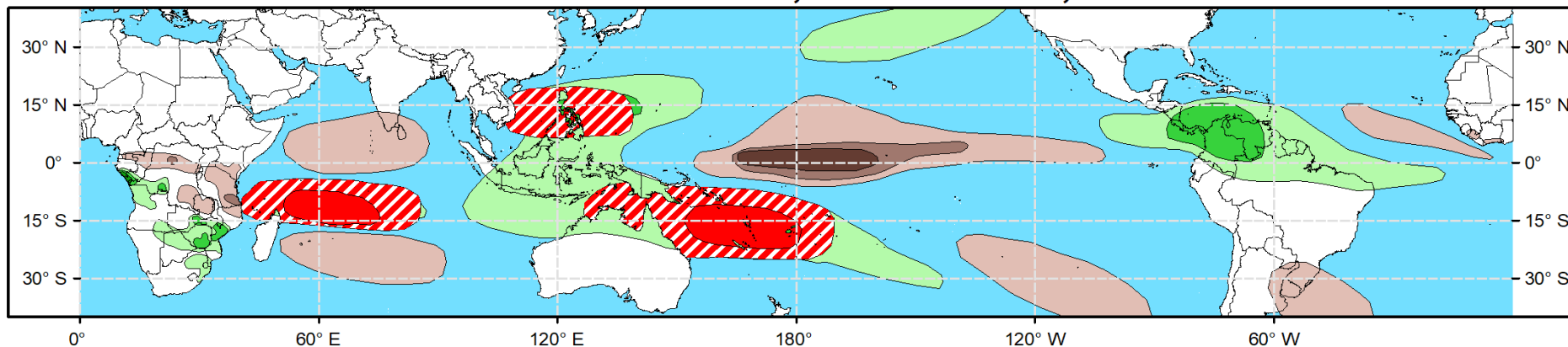
Climate Prediction Center



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