



Weeks 2-3 Global Tropics Hazards Outlook

12/3/2024

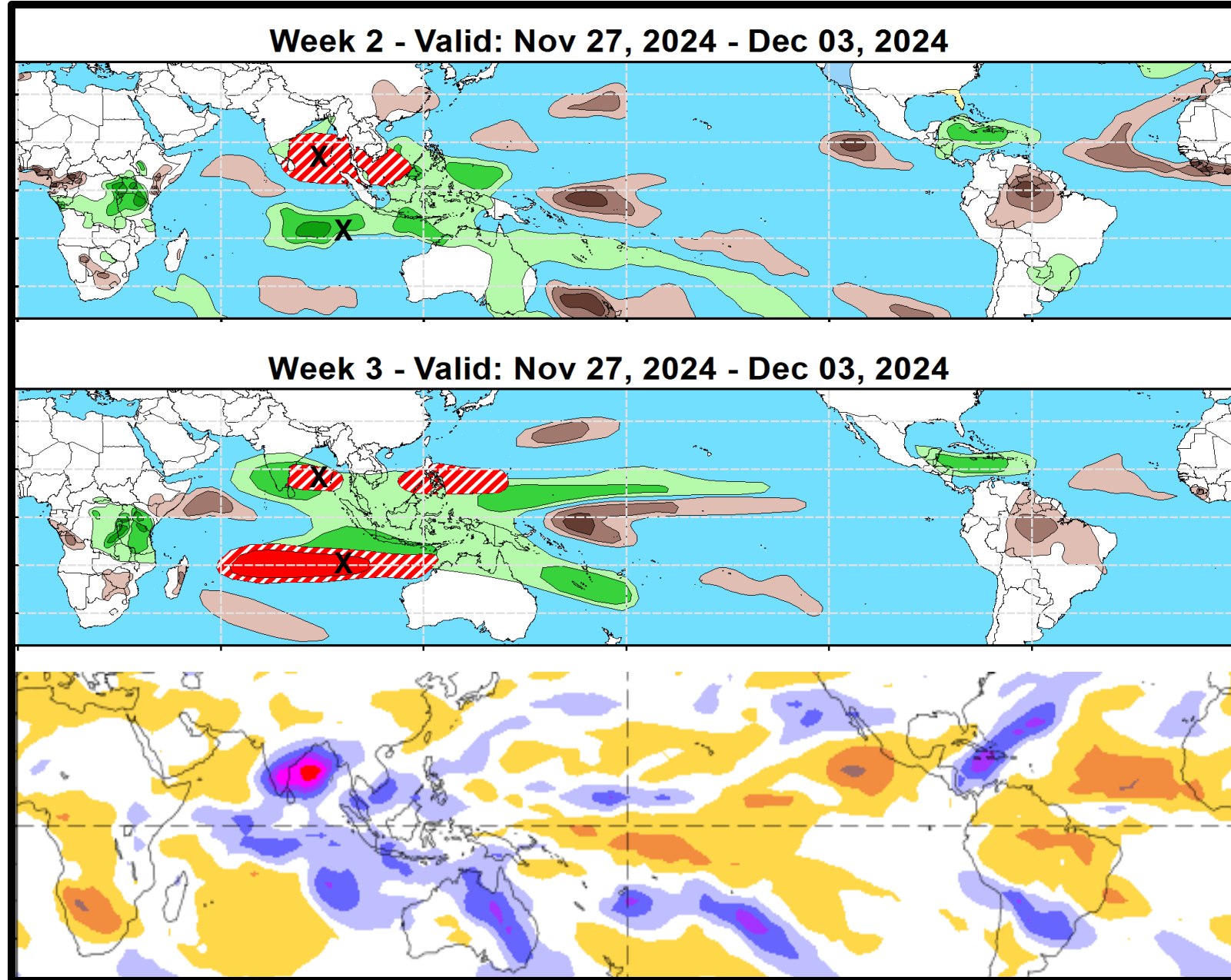
Adam Allgood

NWS / NCEP / Climate Prediction Center

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

Twin tropical cyclones

- Tropical Storm Robyn (Nov 27), SE IO
- Tropical Storm Fengal (Nov 29), Bay of Bengal



Synopsis of Climate Modes:

ENSO: (Nov 14, 2024 Update) *next update on Thursday, Dec 12th!*

- 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 remains active, with the enhanced convective phase now crossing the Maritime Continent, where it is constructively interfering with the base state (cold ENSO, -IOD).
- A strong WWB is ongoing over the east-central Indian Ocean, which may help trigger additional tropical cyclogenesis.
- Rossby wave activity is interacting with the MJO, resulting in a slowdown of the eastward propagation.
- This Rossby wave activity may help reinforce the ENSO base state and disrupt the MJO's ability to generate widespread convection and disrupted trade winds across the Pacific. The upper-level signal is favored to continue propagating, and the GEFS is more bullish on a robust MJO evolution
- The atmospheric response to La Niña is favored to play a greater role in the tropical pattern, with uncertainty regarding how much West Pacific convection the MJO can generate.

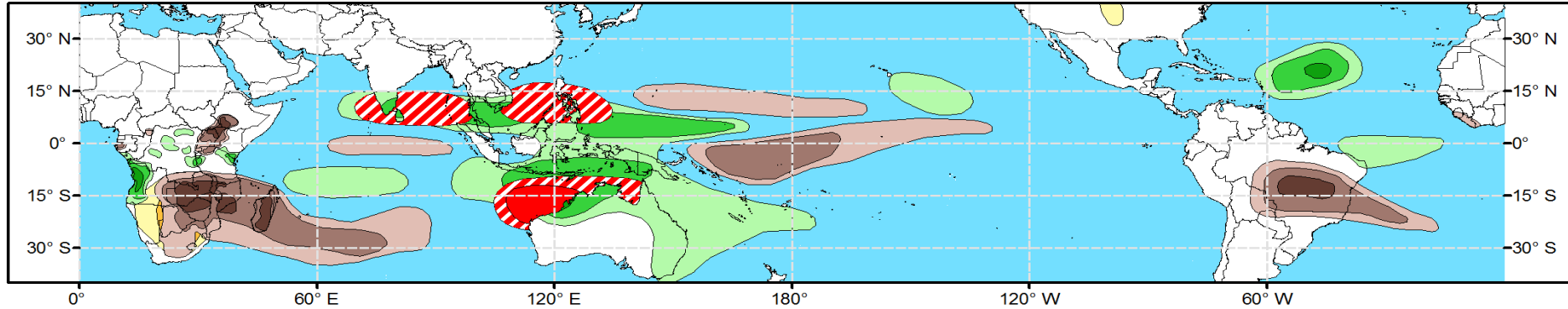
GTH Outlook:



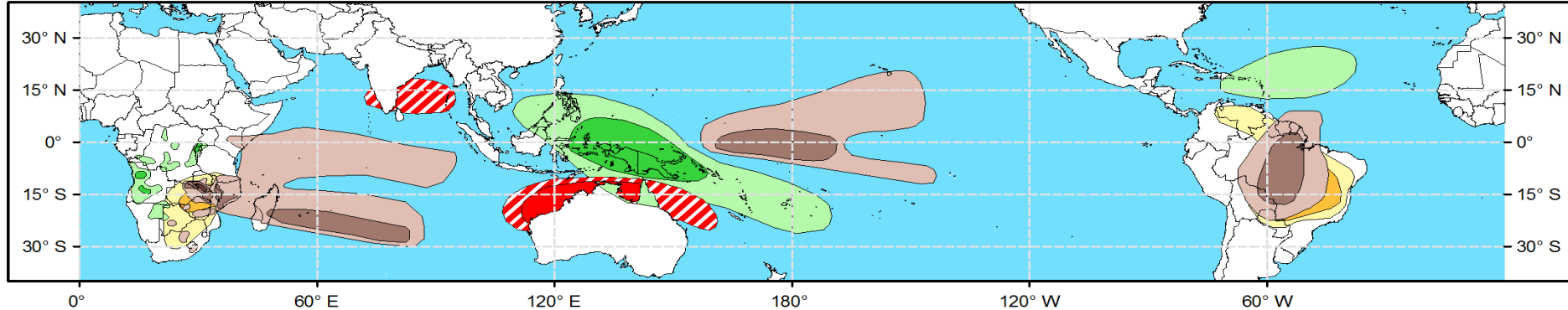
Global Tropics Hazards Outlook Climate Prediction Center



Week 2 - Valid: Dec 11, 2024 - Dec 17, 2024



Week 3 - Valid: Dec 18, 2024 - Dec 24, 2024



**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
Upper third of the historical range*

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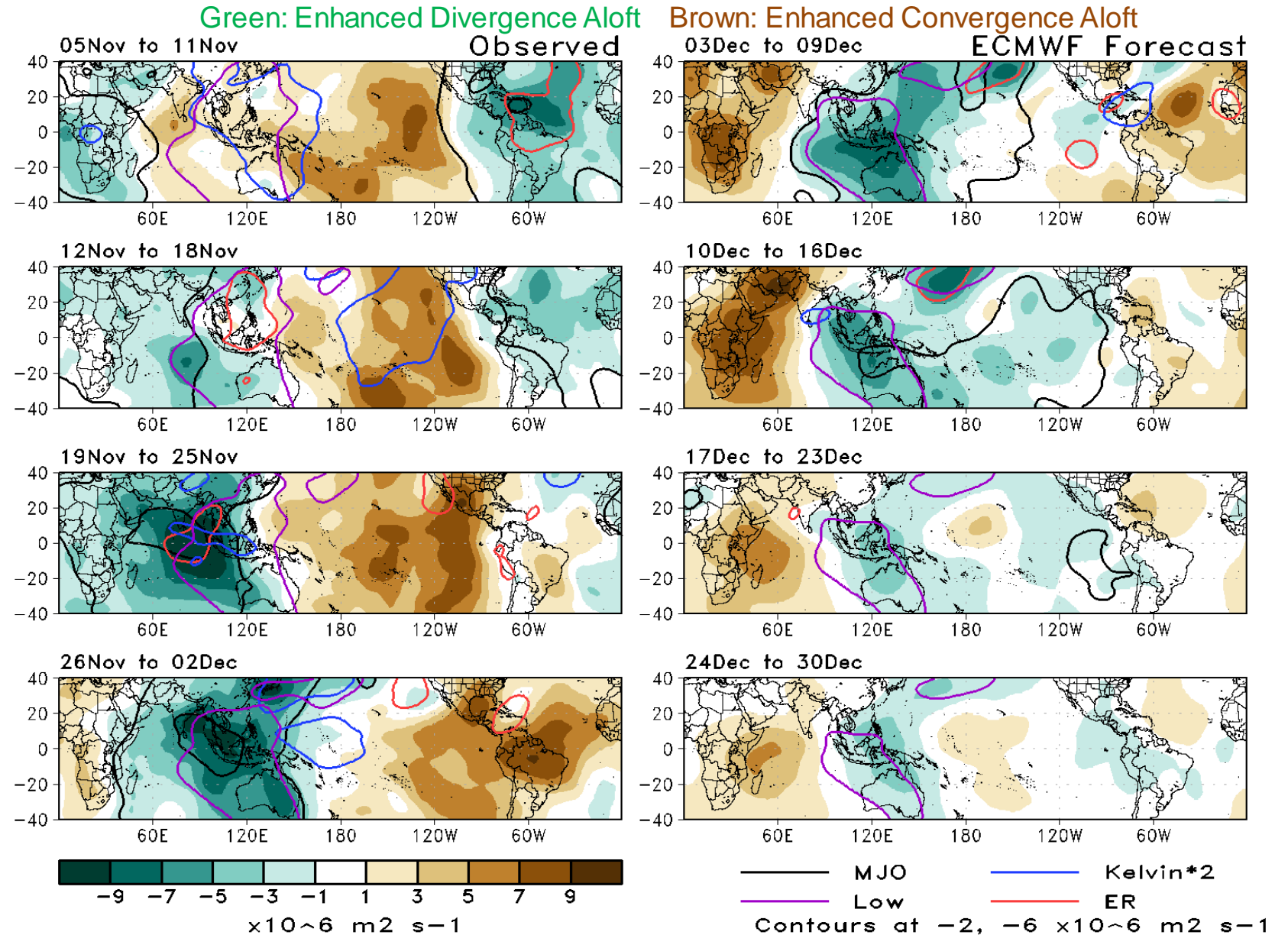
*7-day min temperatures in the
Lower third of the historical range*

**Issued: 12/03/2024
Forecaster: Allgood**

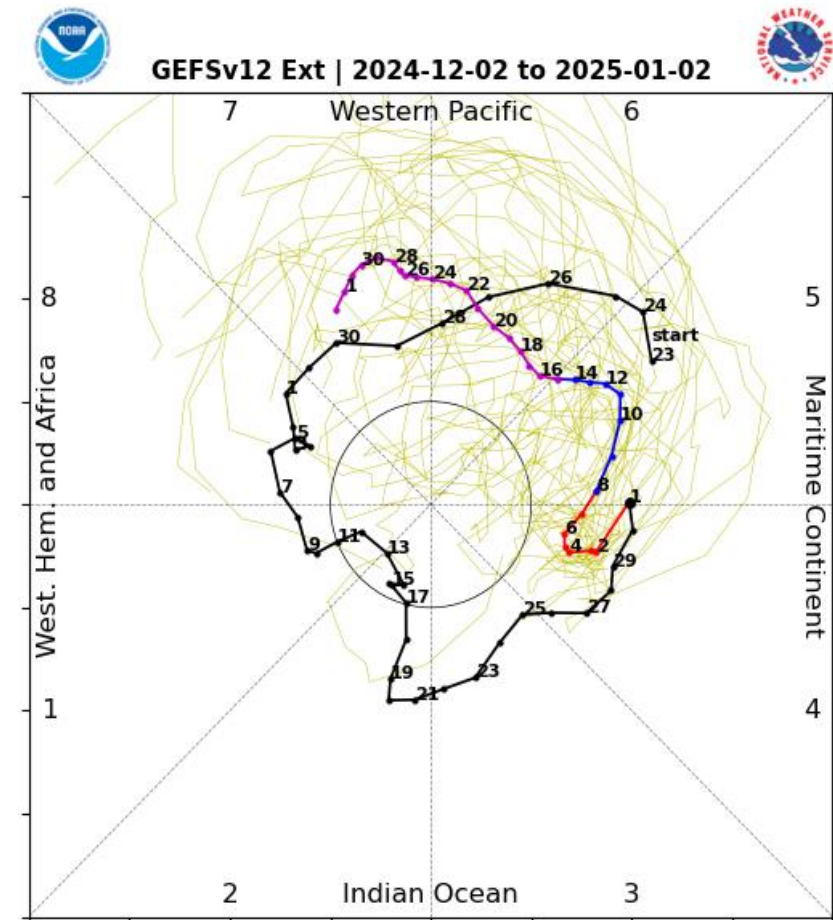
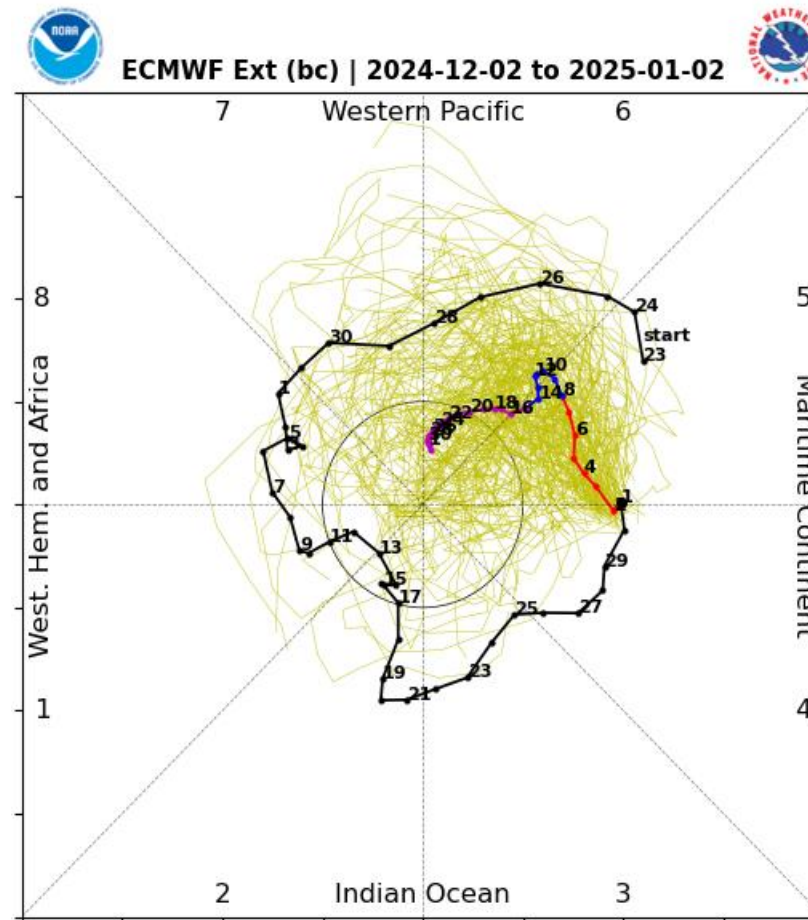
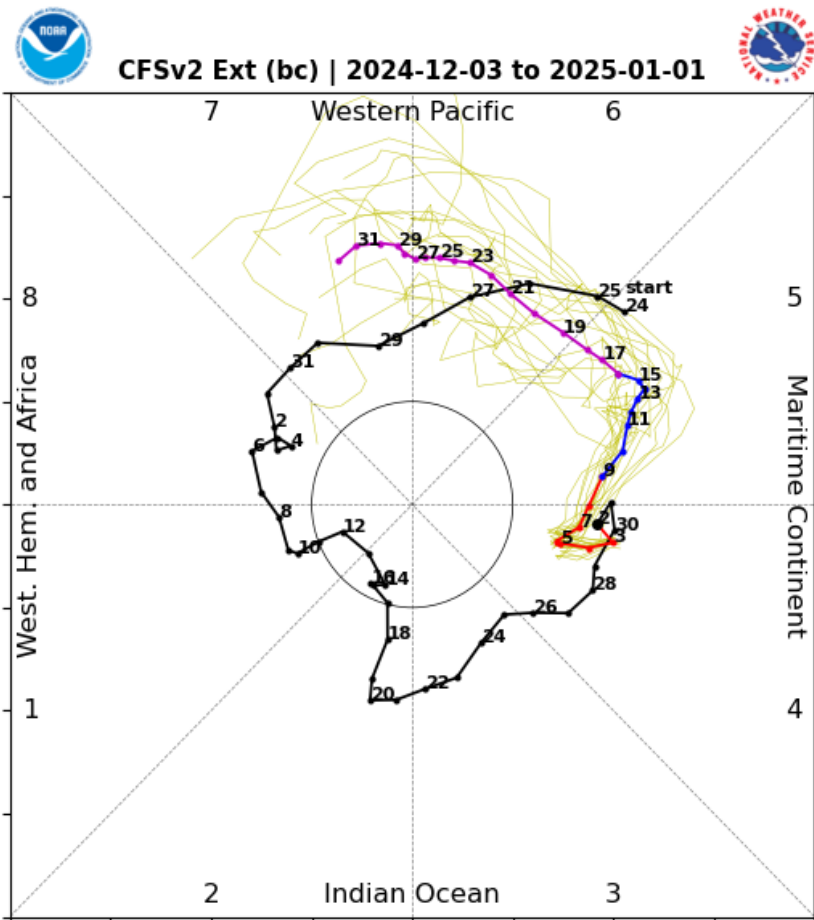
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200-hPa Velocity Potential Anomaly Maps:

- Textbook MJO evolution was observed during November, with a brief disruption of the pattern during mid-November.
- The upper-level VP signal is favored to continue propagating eastward during Weeks 1 and 2, but the pattern appears more responsive to -IOD and La Niña activity towards the end of December.

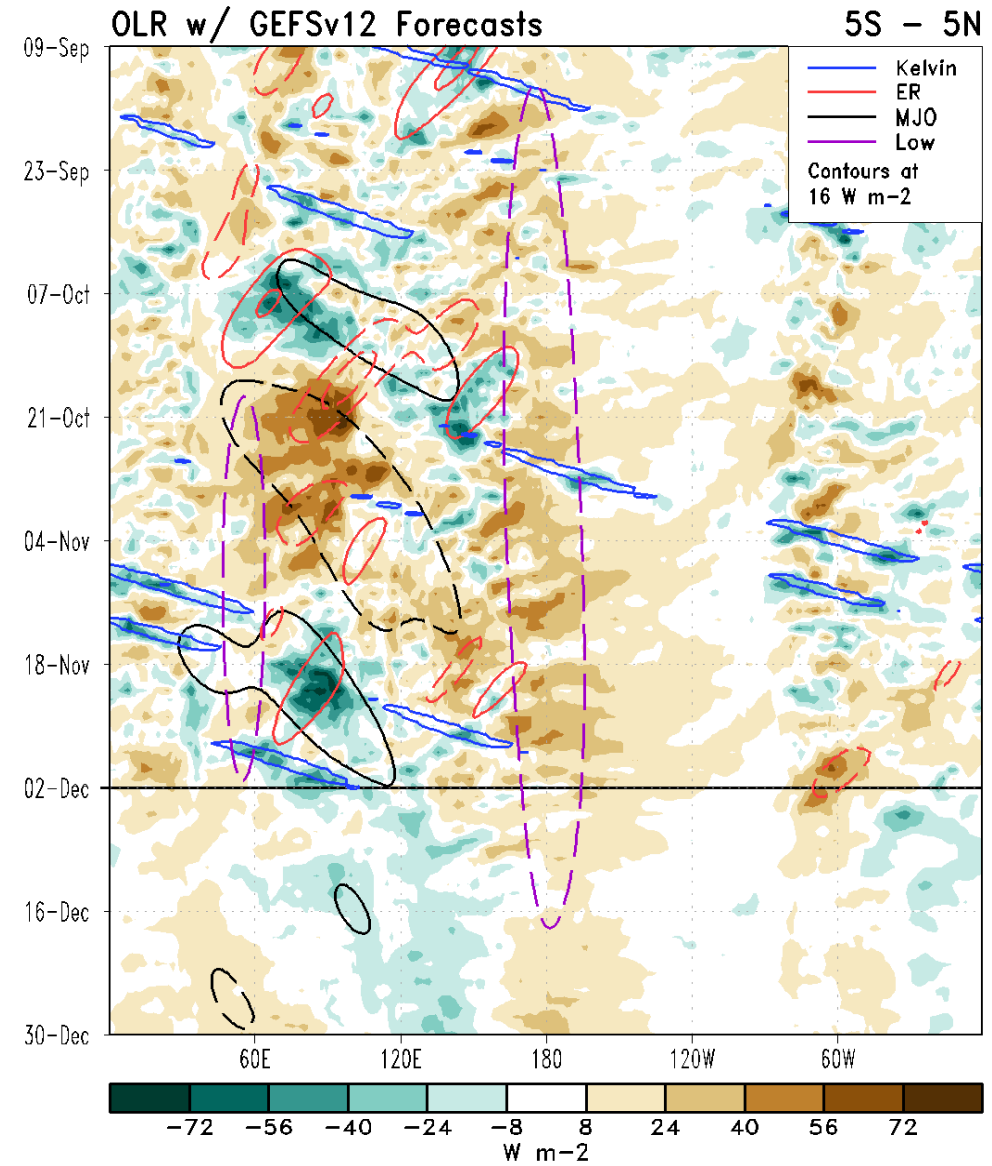
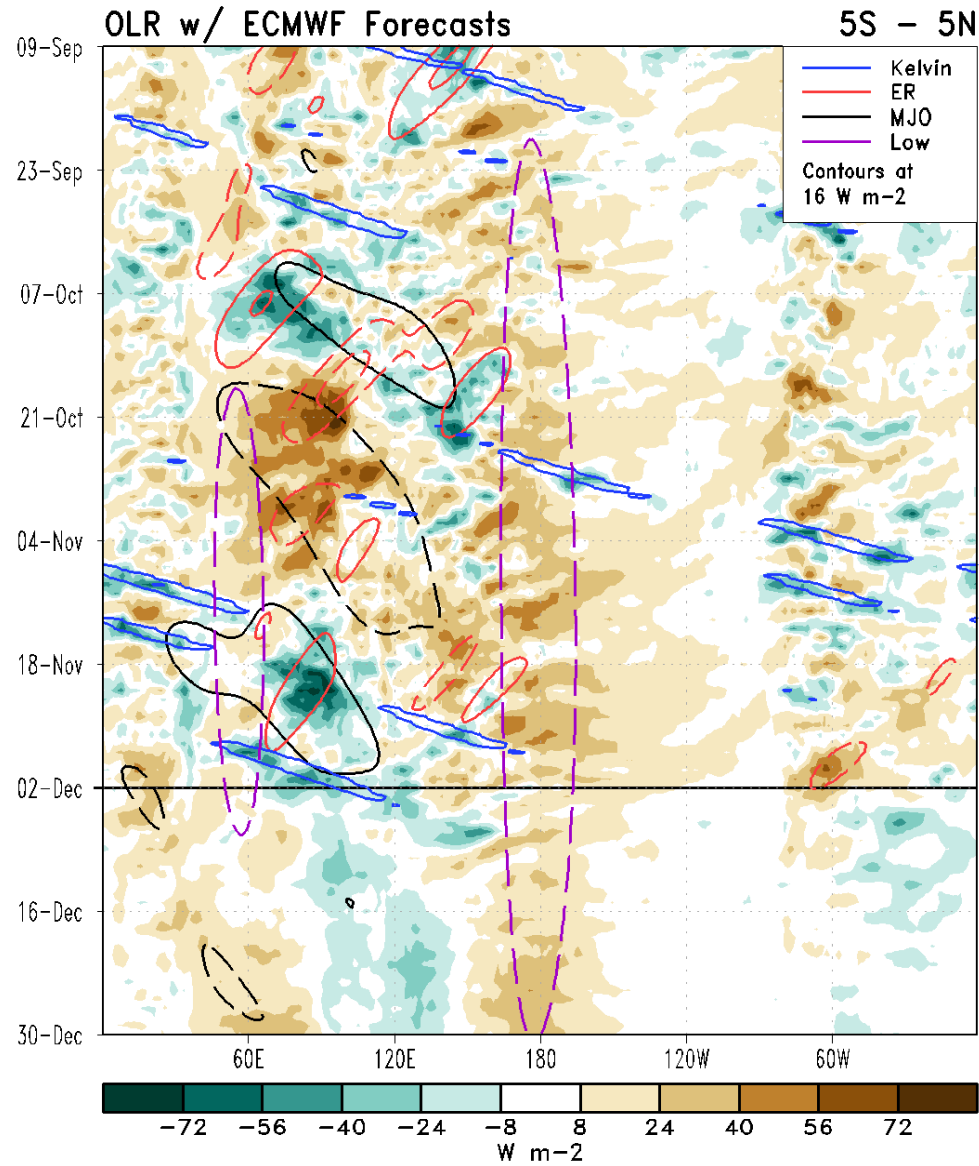


RMM Index Observations & Forecasts:



- The GEFS and CFS are more bullish on continued MJO evolution following the interaction with Rossby waves over the MT.
- The ECMWF shows a weaker signal overall, as the upper-level signal continues to propagate while decoupling from the lower atmospheric response.

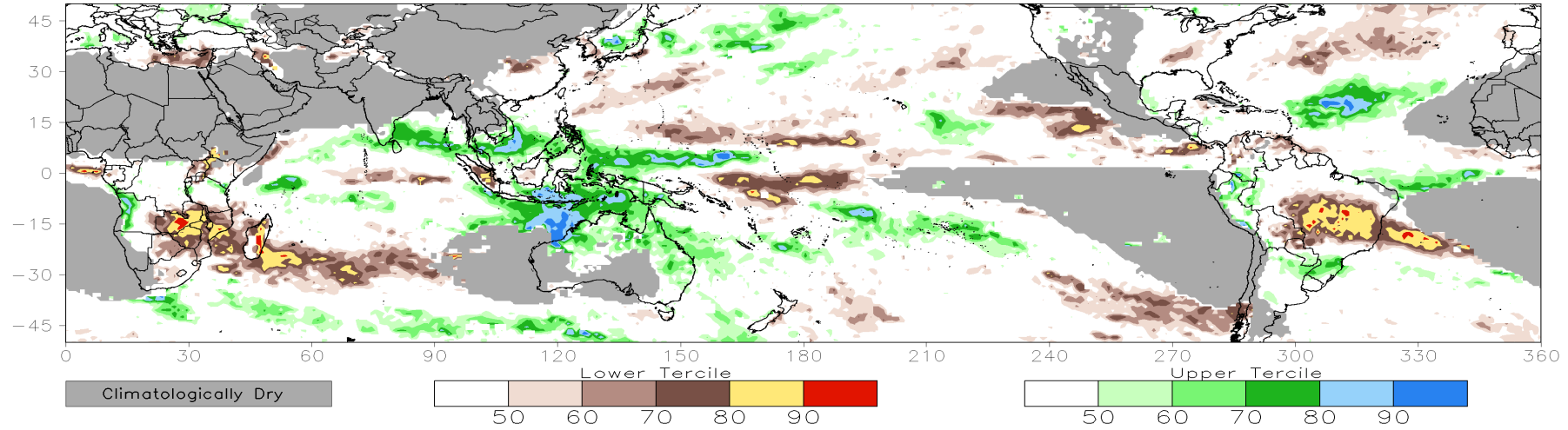
Outgoing Longwave Radiation (OLR) Anomaly Time/Lon Plots:



Consolidated Probabilistic Precipitation: Weeks 2 & 3

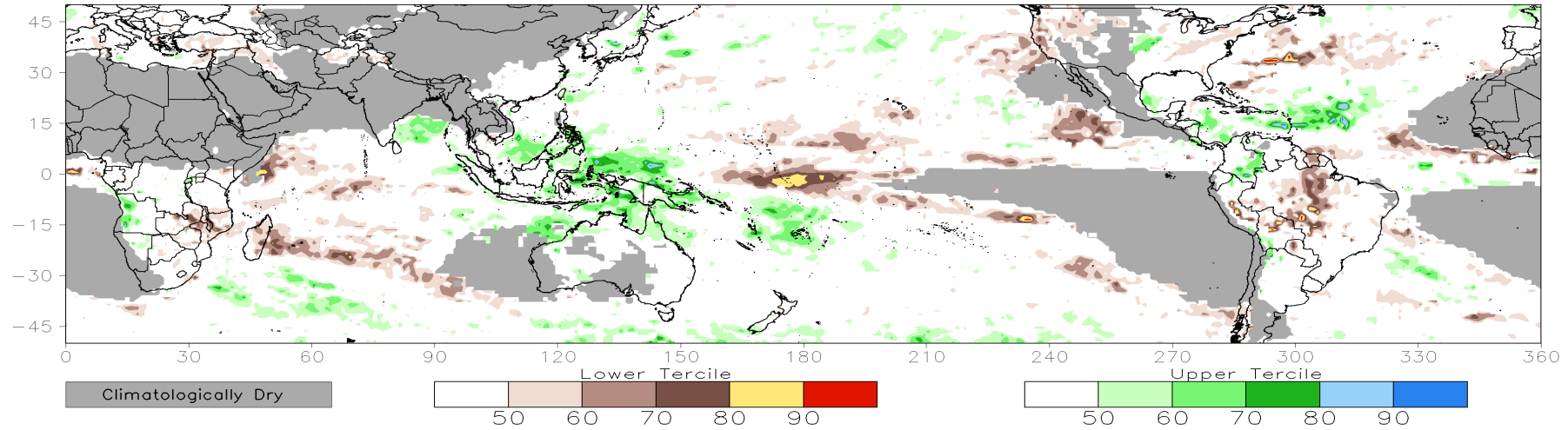
CONS 00z: Week2 Probability for Total Rainfall Below(Above) Lower(Upper) Tercile (%)

Valid: 11Dec2024–17Dec2024



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

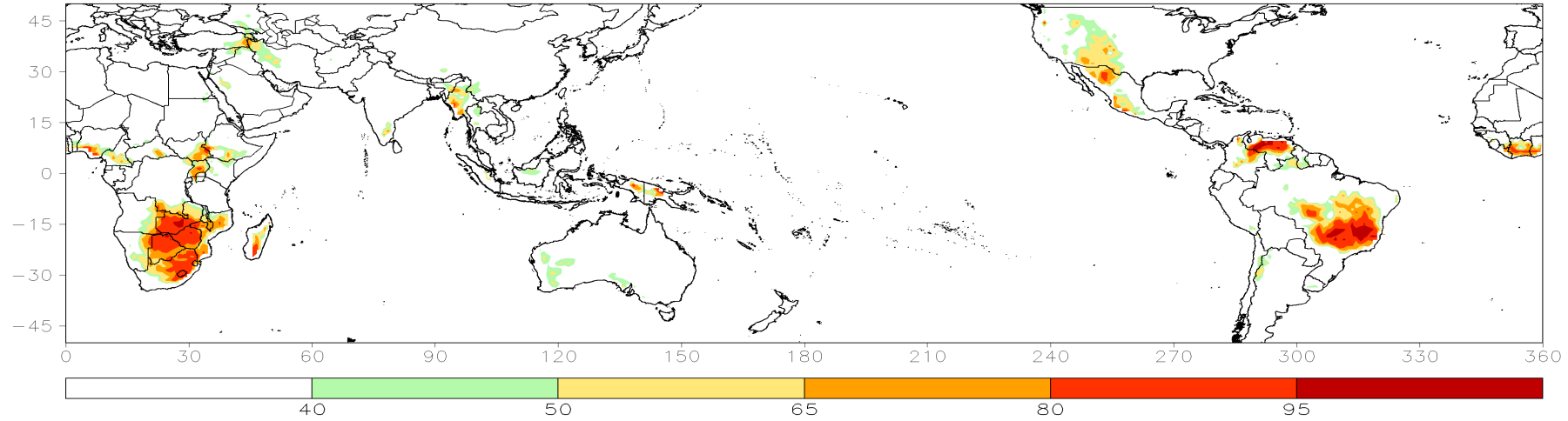
Valid: 18Dec2024–24Dec2024



Consolidated Probabilistic Temperatures: Week-2

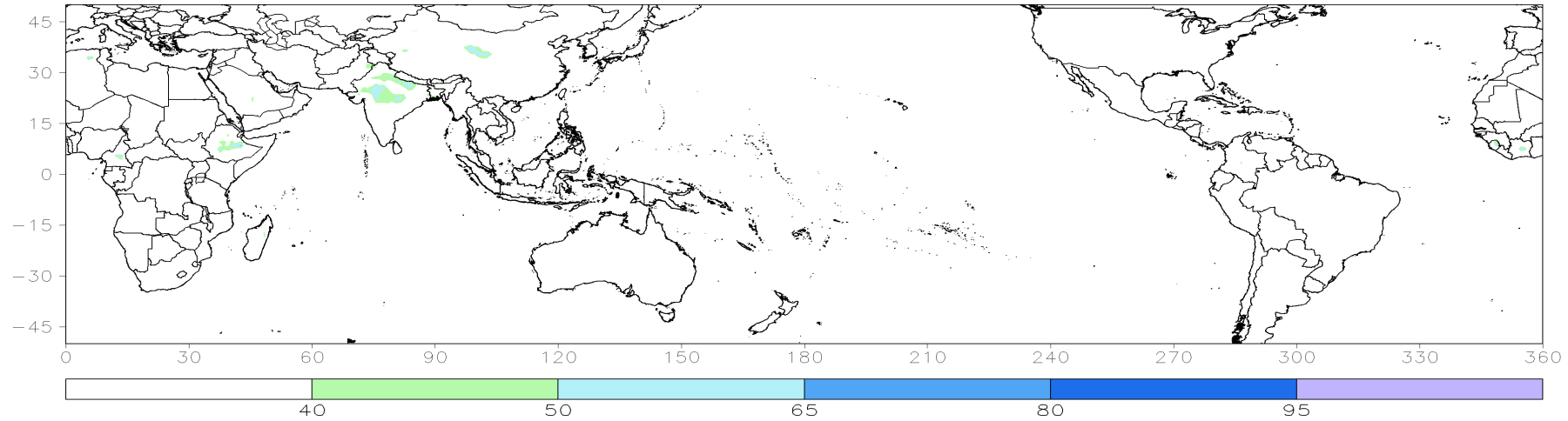
CFS/ECMWF/GEFS Correlation Weighted: Week2 Probability for Tmax Above Upper Tercile (%)

Valid: 11Dec2024–17Dec2024



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

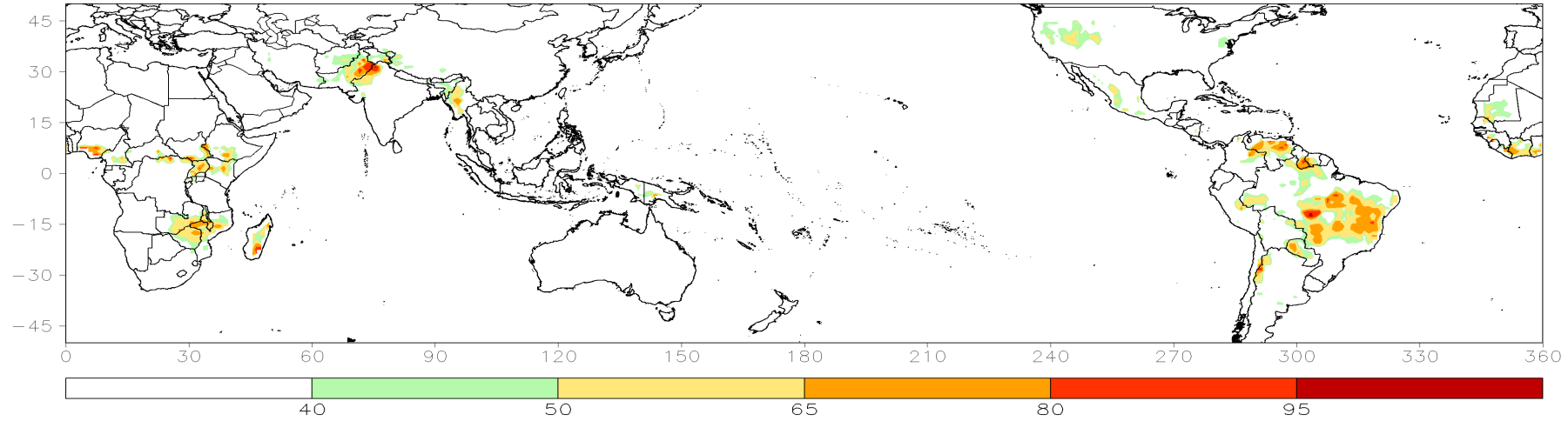
Valid: 11Dec2024–17Dec2024



Consolidated Probabilistic Temperatures: Week-3

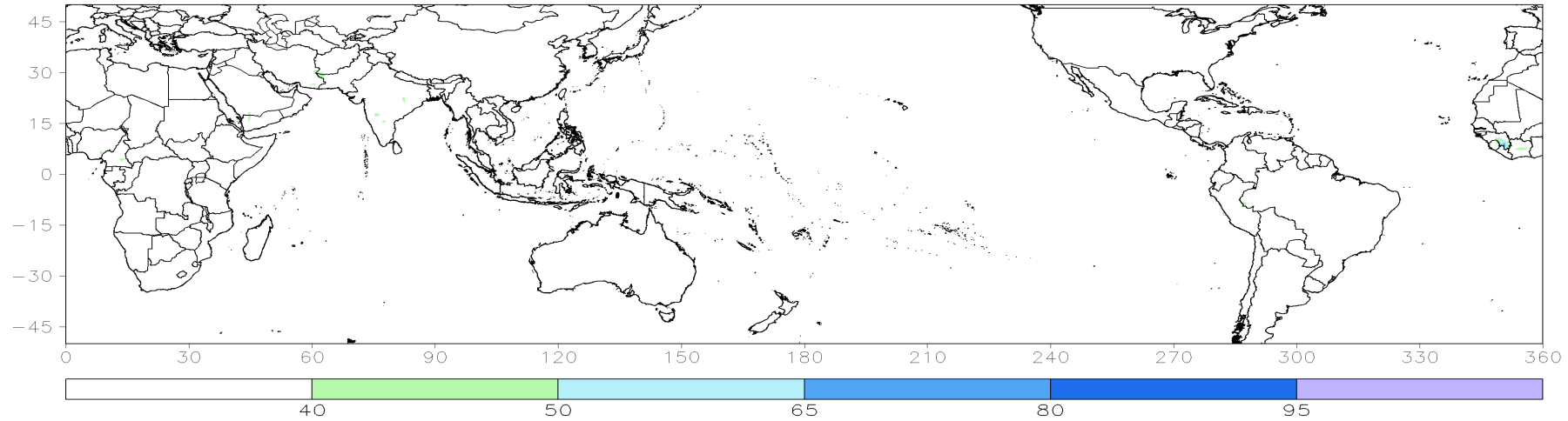
CFS/ECMWF/GEFS Correlation Weighted: Week3 Probability for Tmax Above Upper Tercile (%)

Valid: 18Dec2024–24Dec2024



CFS/ECMWF/GEFS Correlation Weighted: Week3 Probability for Tmin Below Lower Tercile (%)

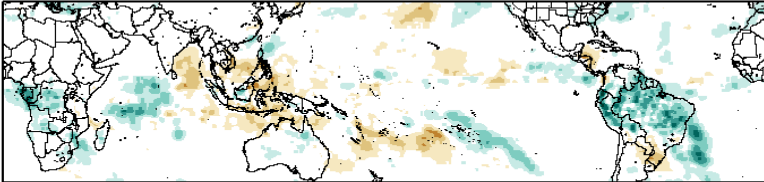
Valid: 18Dec2024–24Dec2024



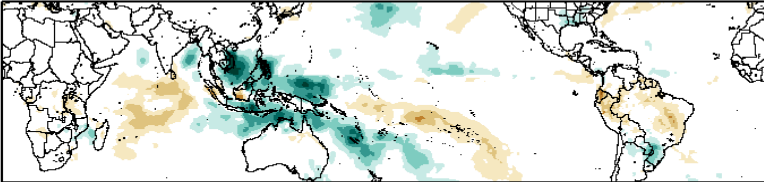
Historical Precipitation Anomalies By MJO Phase:

NDJ MJO Composite: GPCP1DD (mm/day)

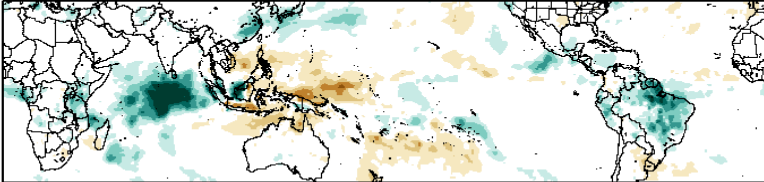
Phase 1



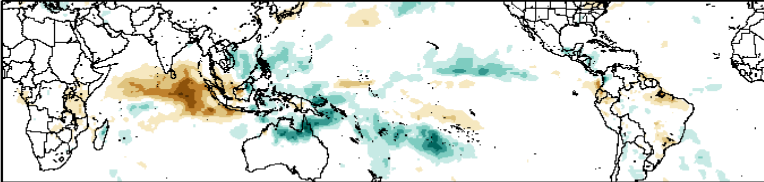
Phase 5



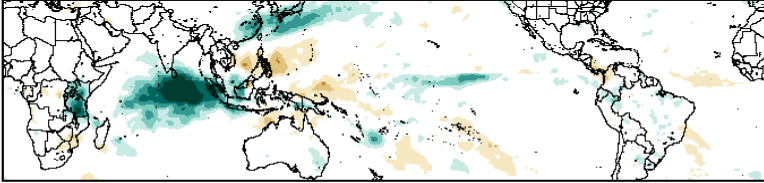
Phase 2



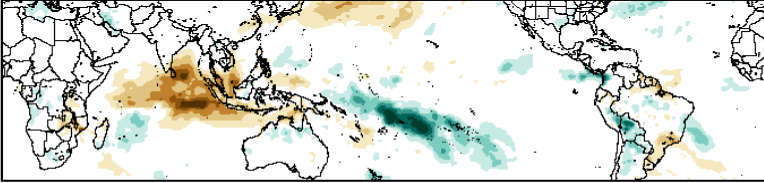
Phase 6



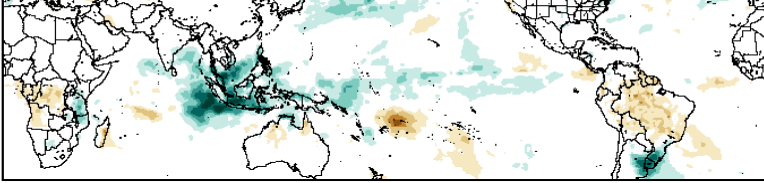
Phase 3



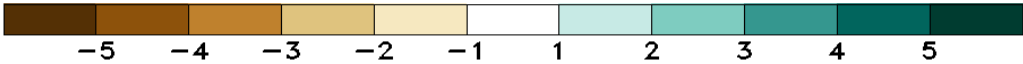
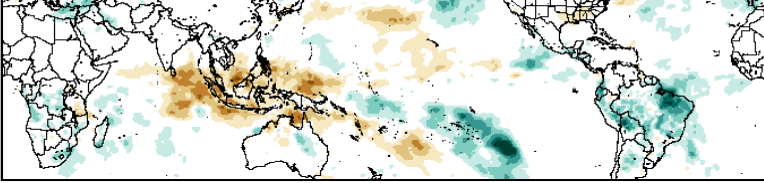
Phase 7



Phase 4

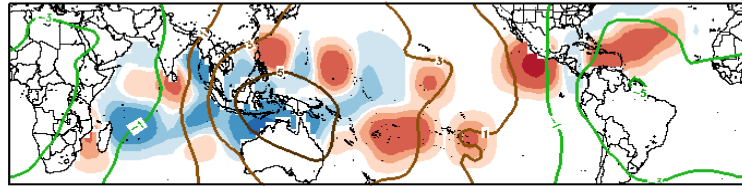


Phase 8

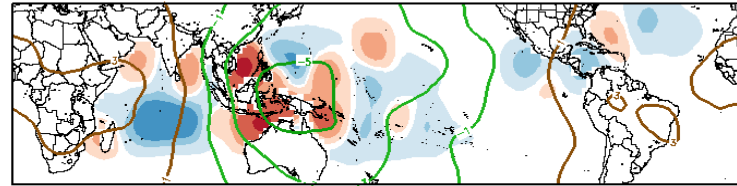


Historical TC Origin Anomalies By MJO Phase & Weeks 2+3 Genesis Climo:

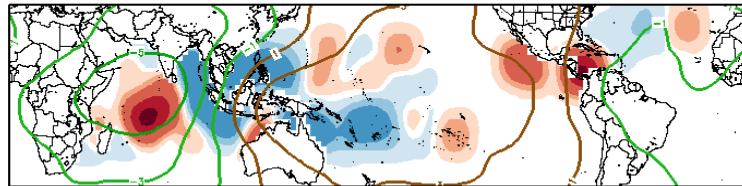
NDJ MJO Composite: Mean TC Origin Density Anomaly ($\#TCs/277km^2*100$)
w/ NDJ CHI200 ($\times 10^6 m^2 s^{-1}$) / Contours every $2 \times 10^6 m^2 s^{-1}$



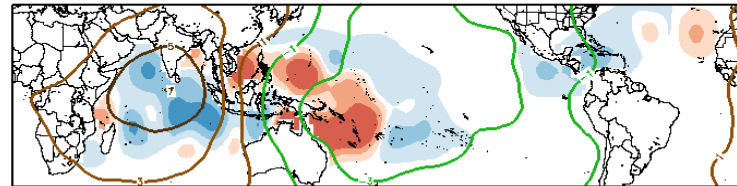
Phase 1



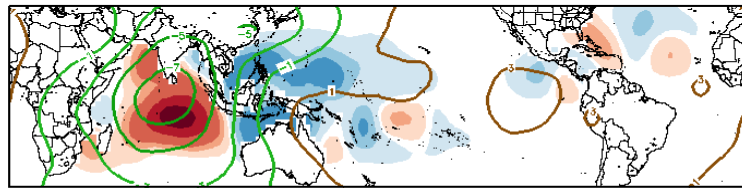
Phase 5



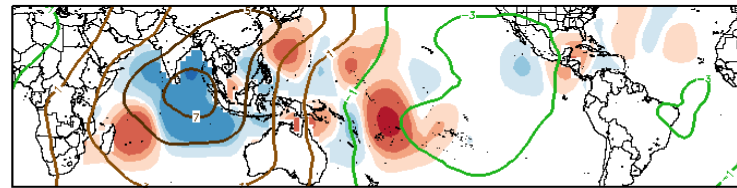
Phase 2



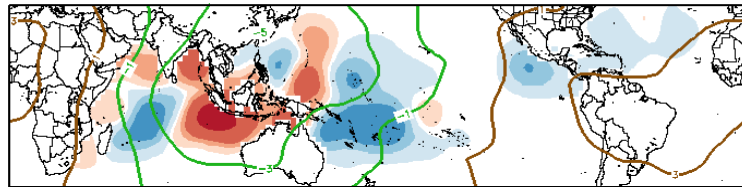
Phase 6



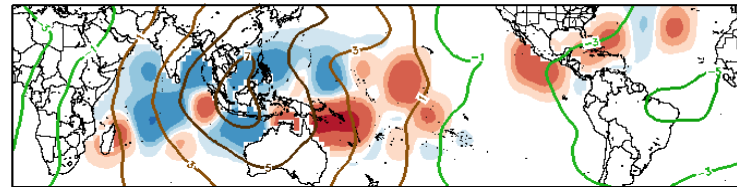
Phase 3



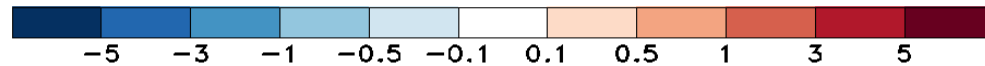
Phase 7



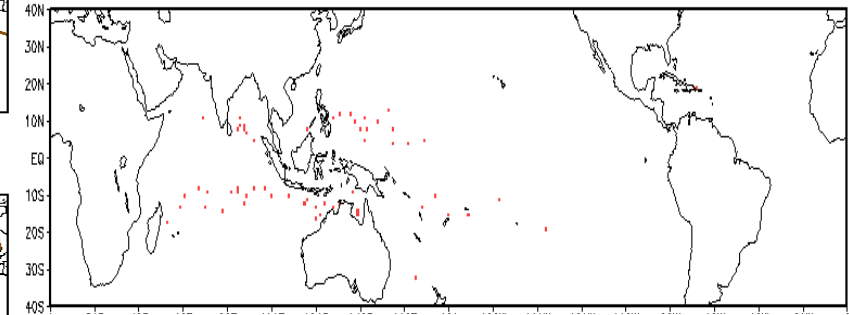
Phase 4



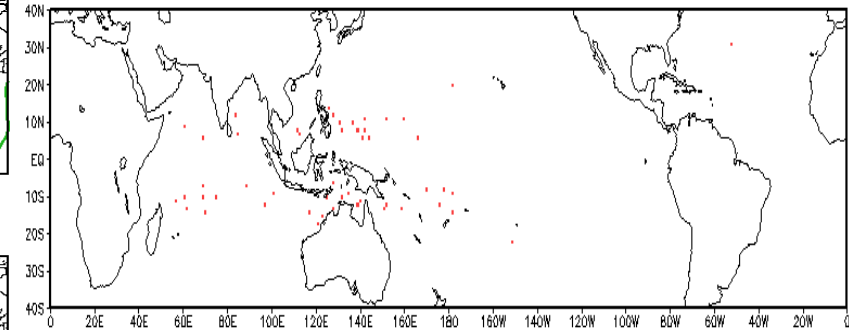
Phase 8



Observed TC Genesis, 1979–2021
7-day Period 1211 to 1217

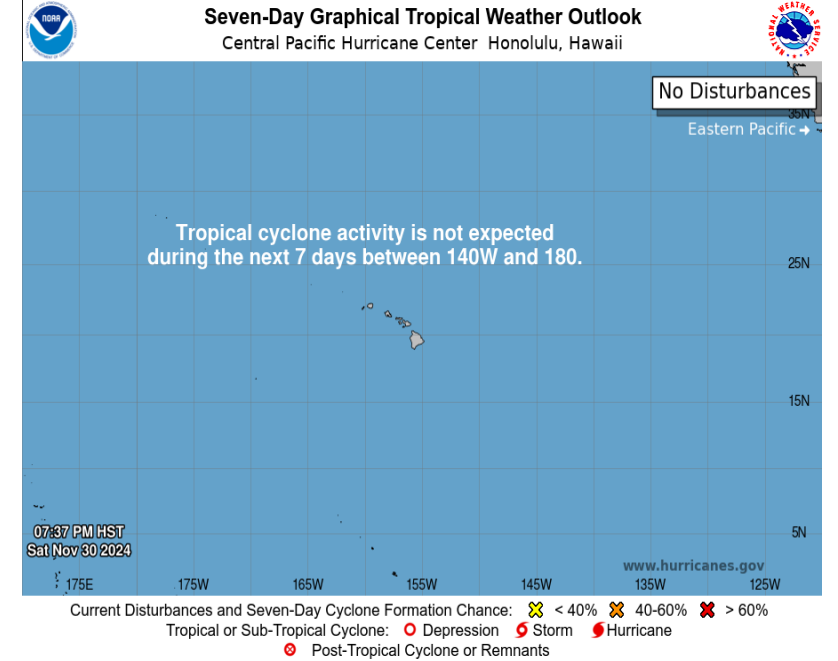
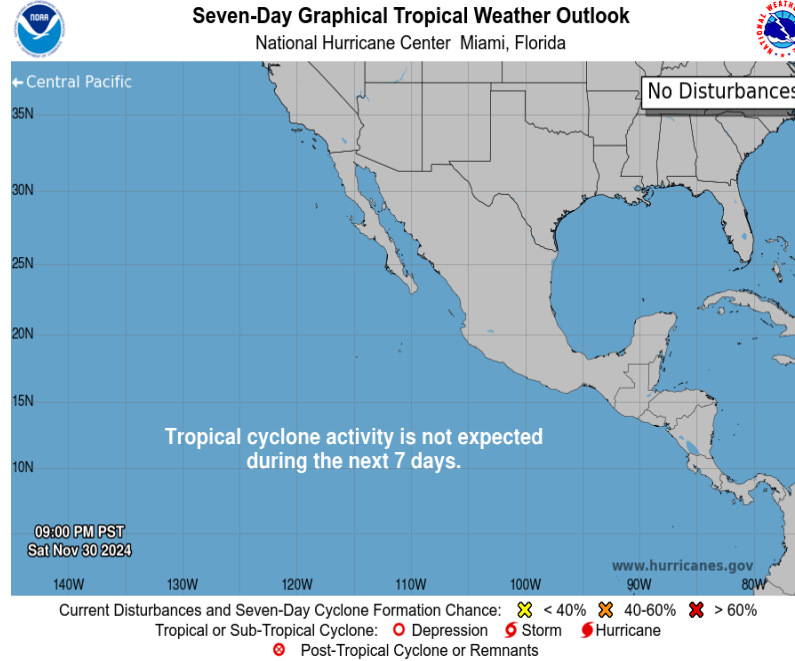
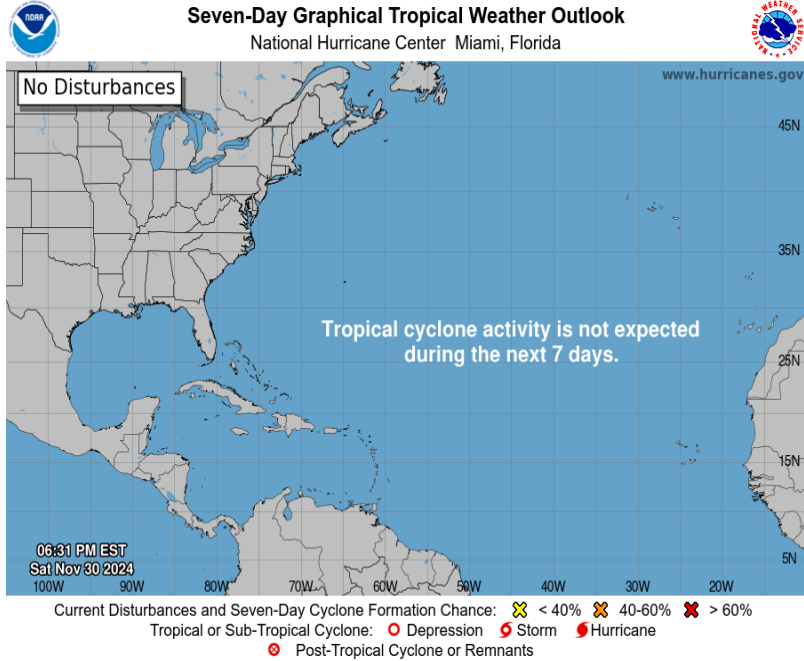


Observed TC Genesis, 1979–2021
7-day Period 1218 to 1224



Experimental

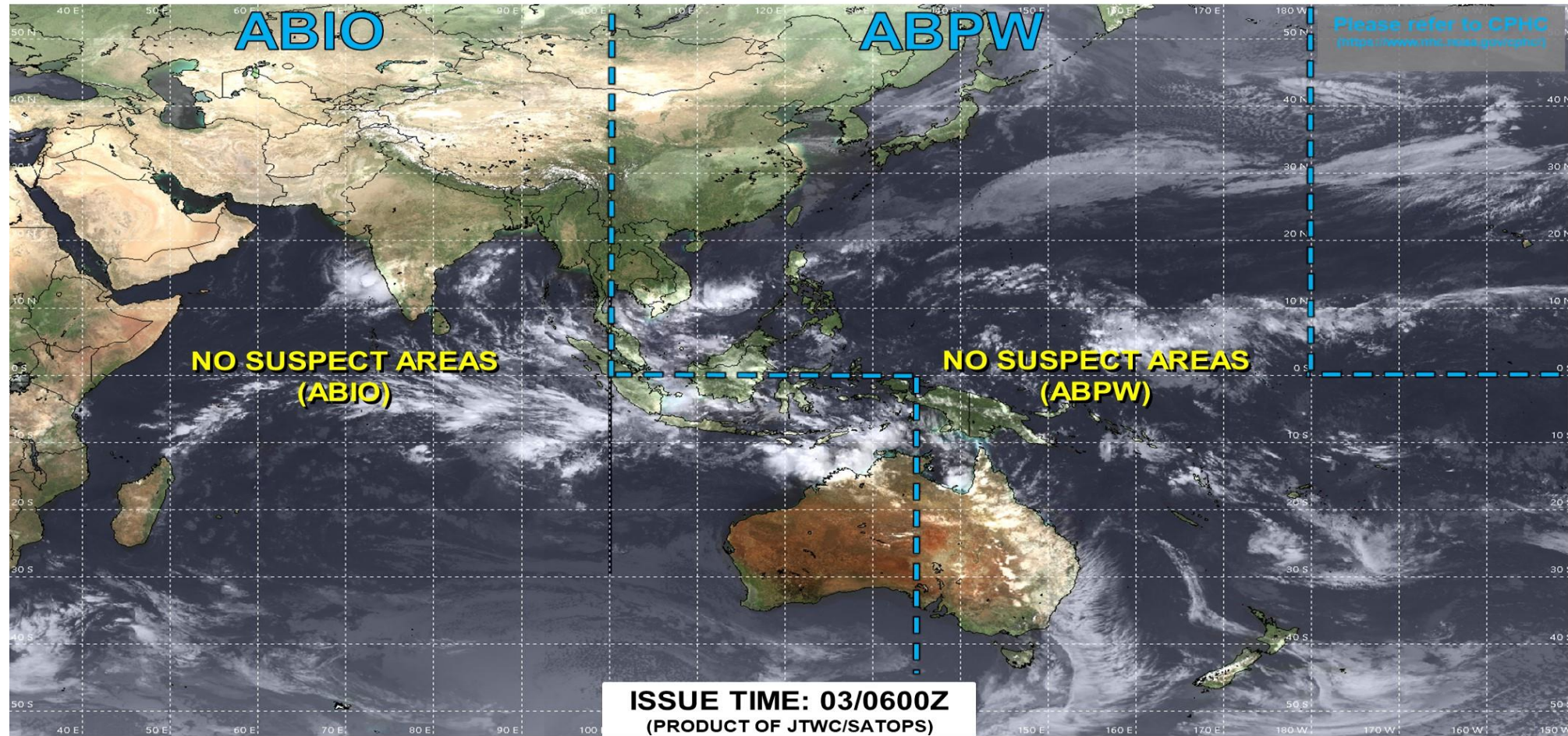
Tropical Cyclone Monitoring/Forecast: NHC / CPHC



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)



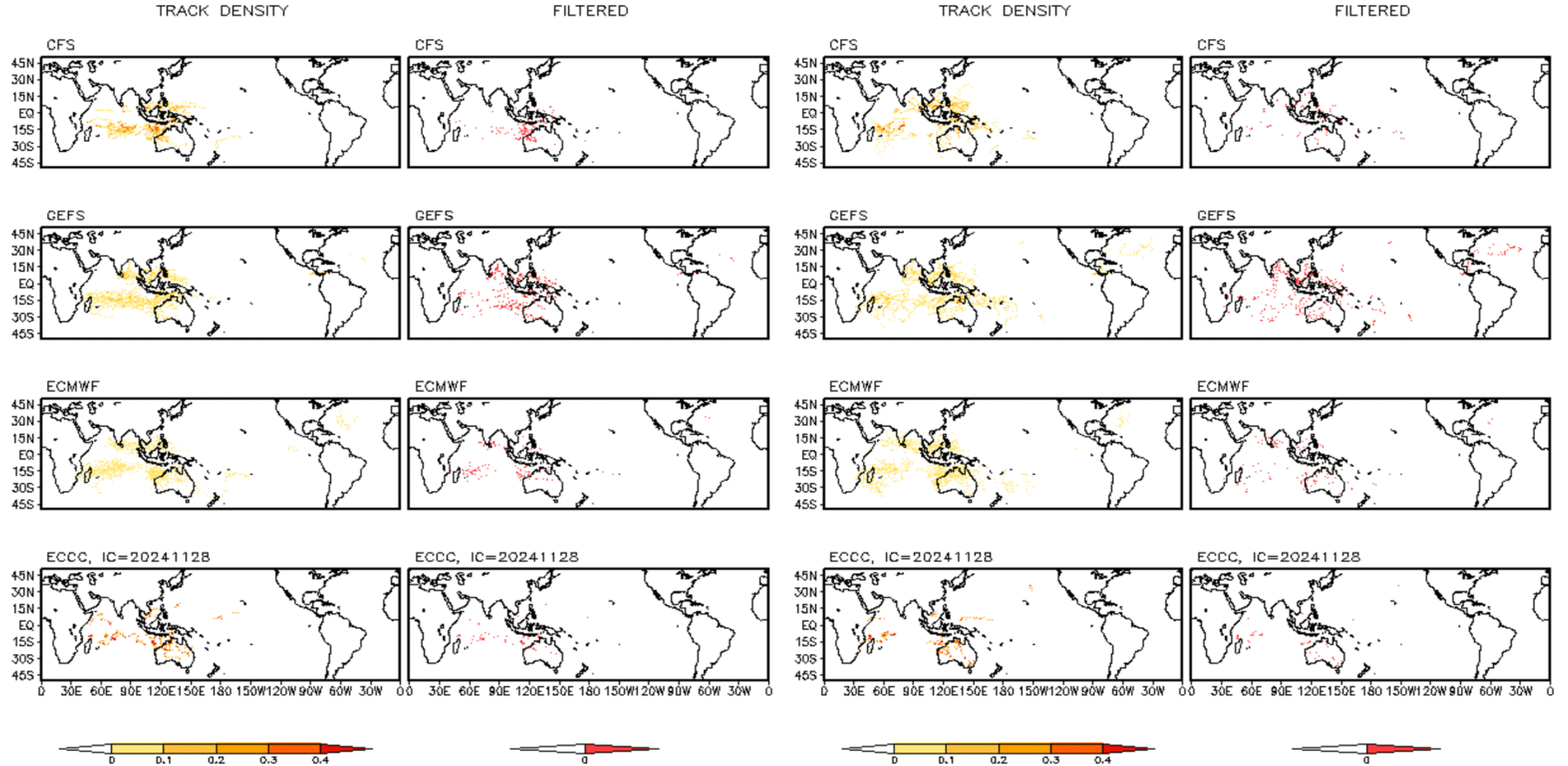
Monitoring for potential transition to TC. Invest label color denotes tropical transition probability

 Tropical Cyclone (Reference Warning)

Multi-Model TC Track Densities: Weeks 2+3

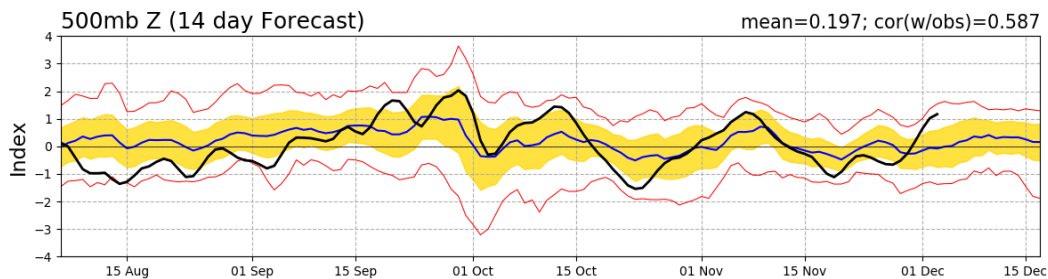
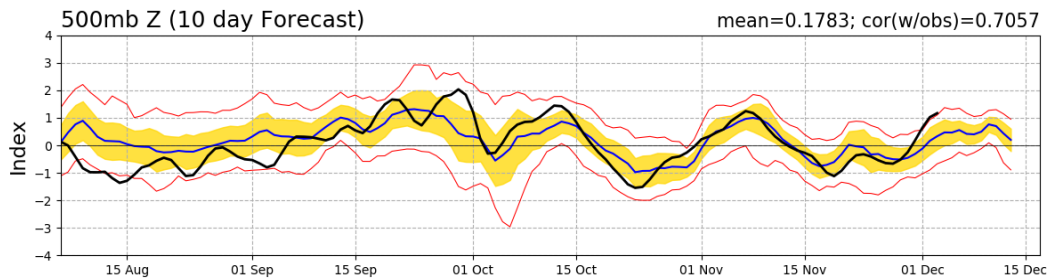
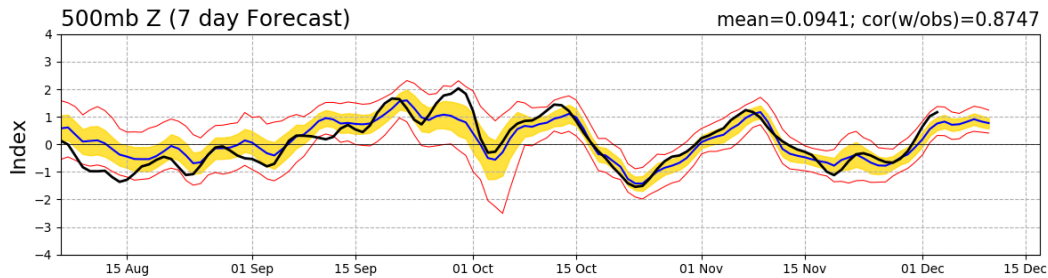
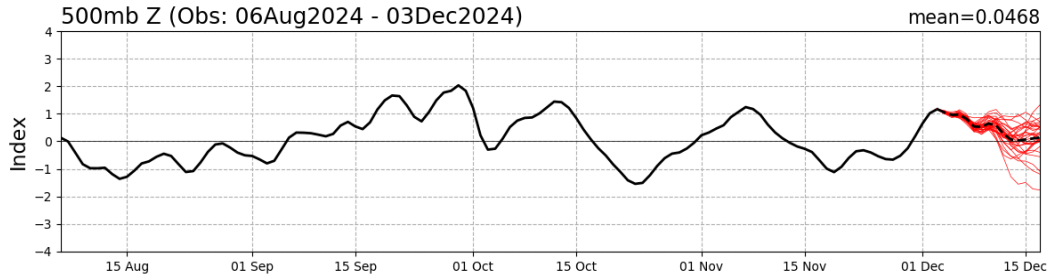
Storm Track Density Distribution, IC=20241202
Week 2 Forecast: 1211-1217

Storm Track Density Distribution, IC=20241202
Week 3 Forecast: 1218-1224

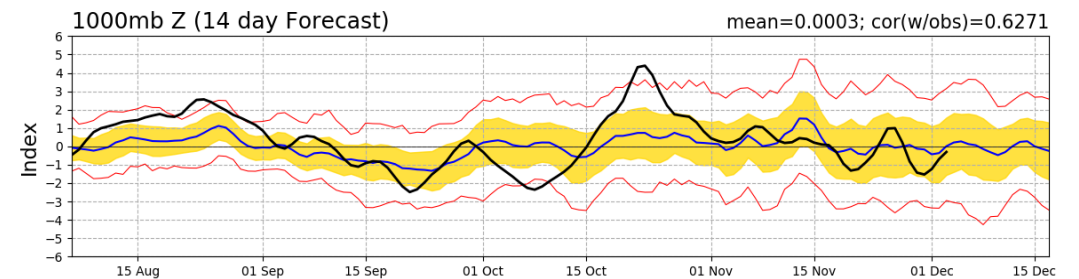
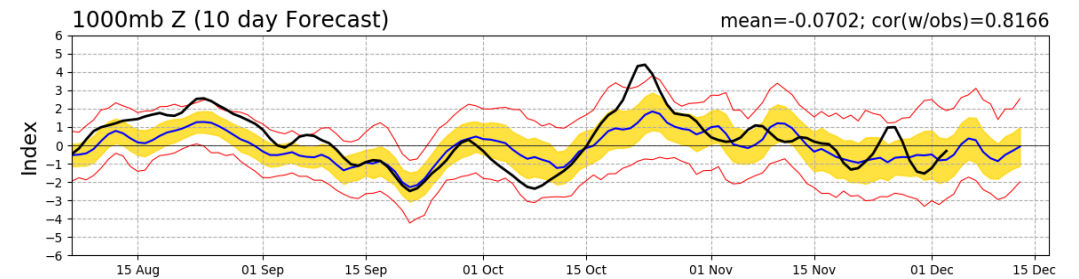
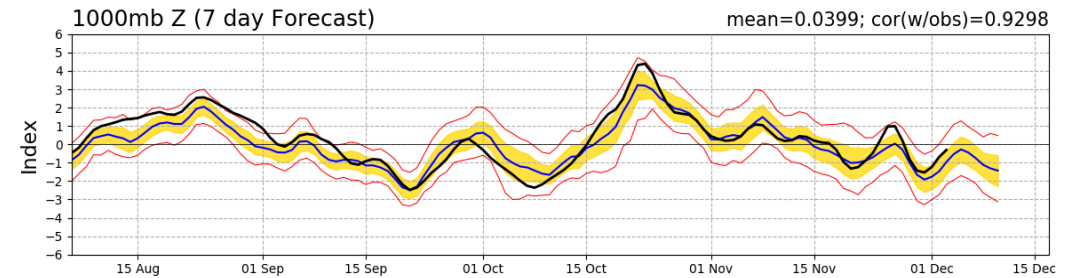
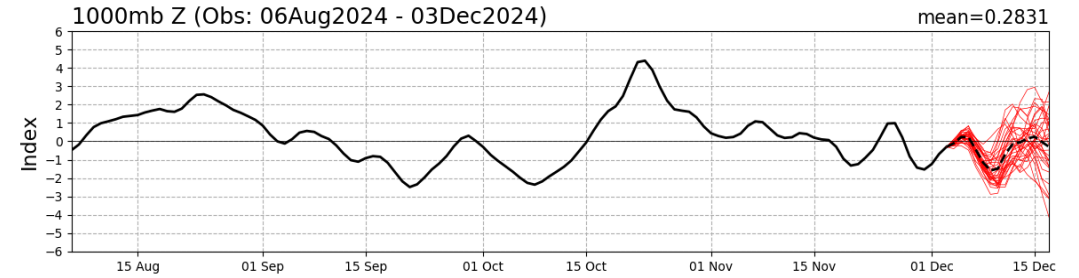


Teleconnection Indices: PNA / AO:

PNA Index: Observed & GEFS Forecasts

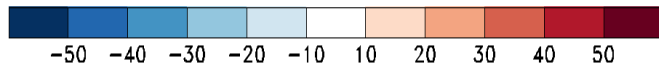
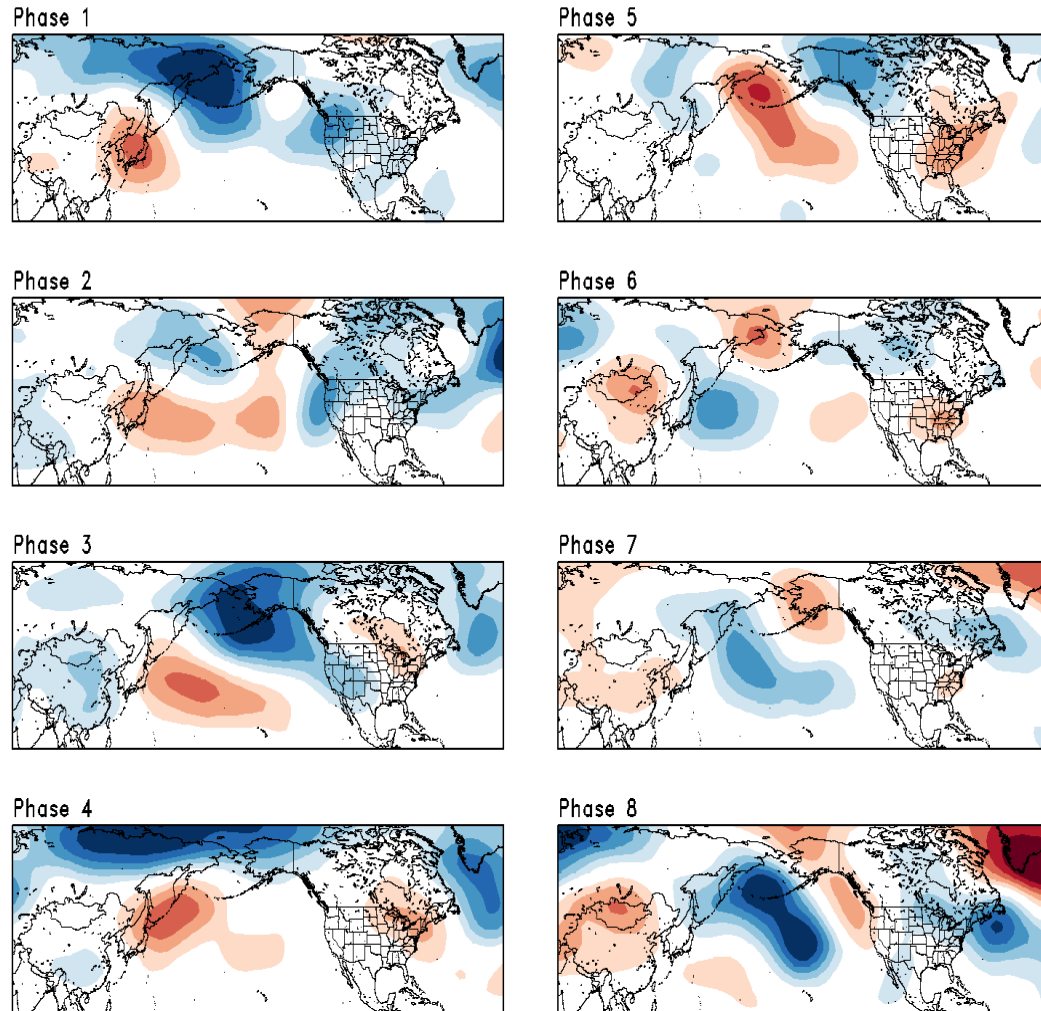


AO Index: Observed & GEFS Forecasts

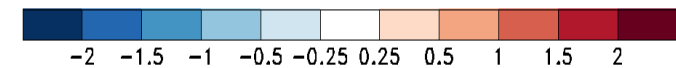
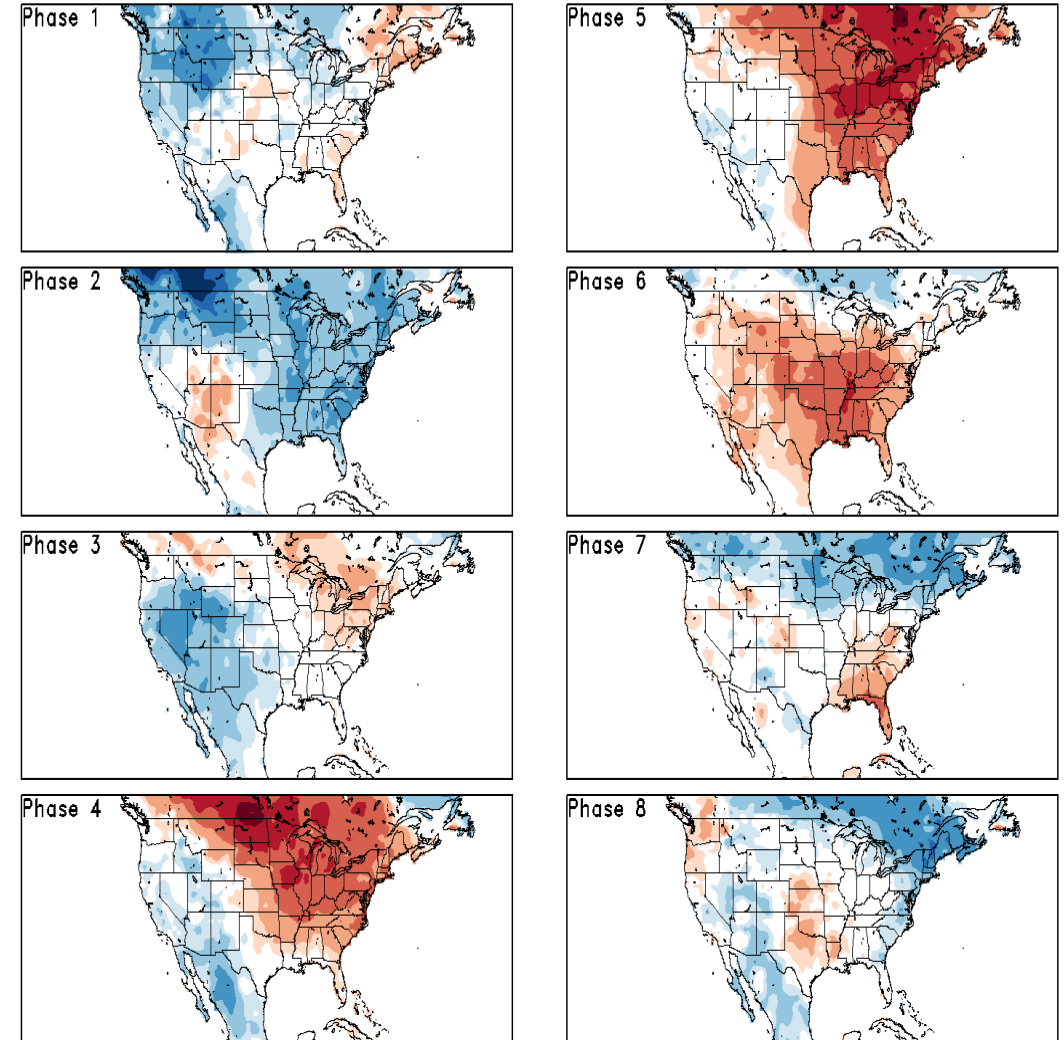


Historical 500-hPa Height & U.S. Temperatures By MJO Phase:

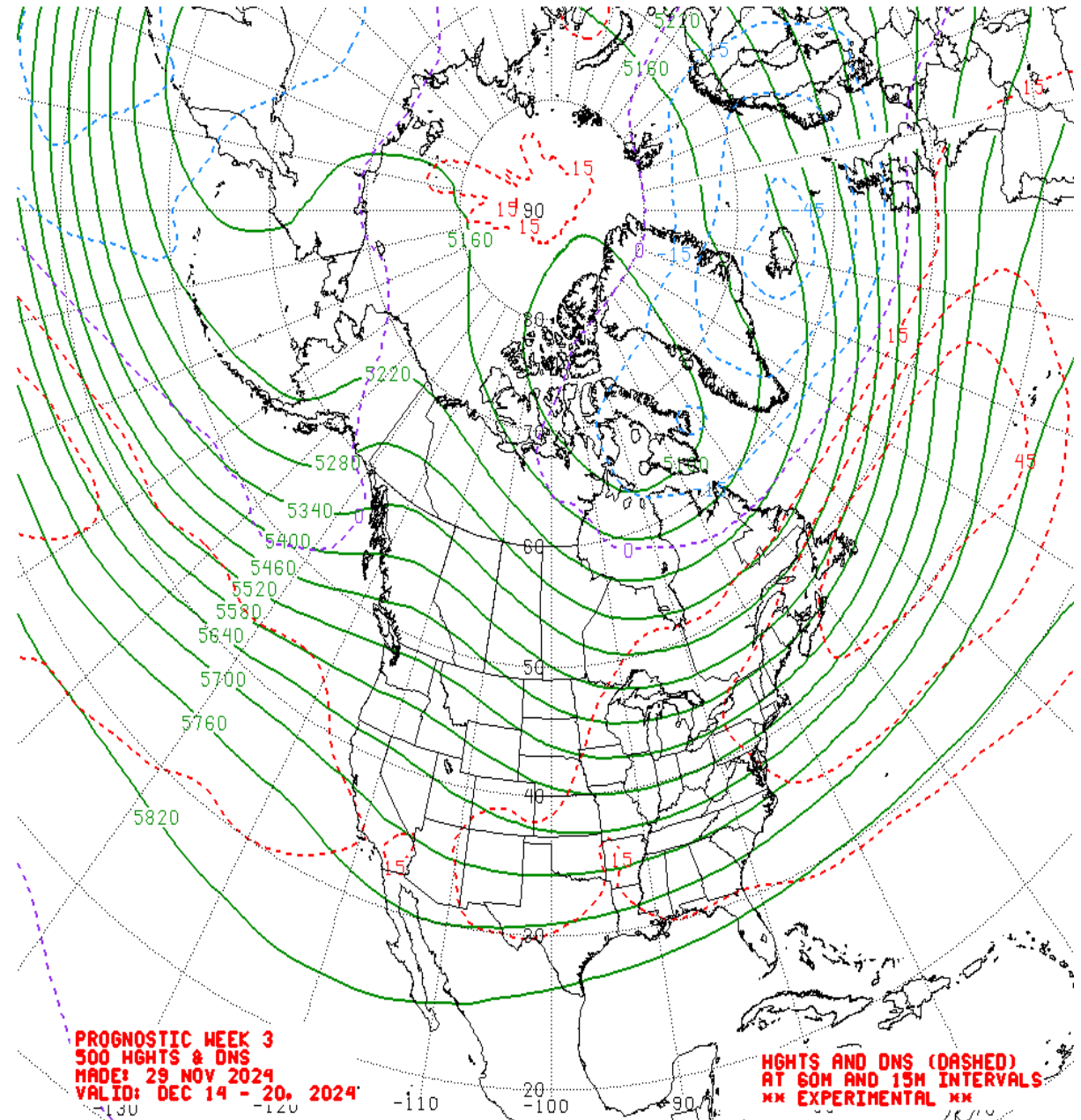
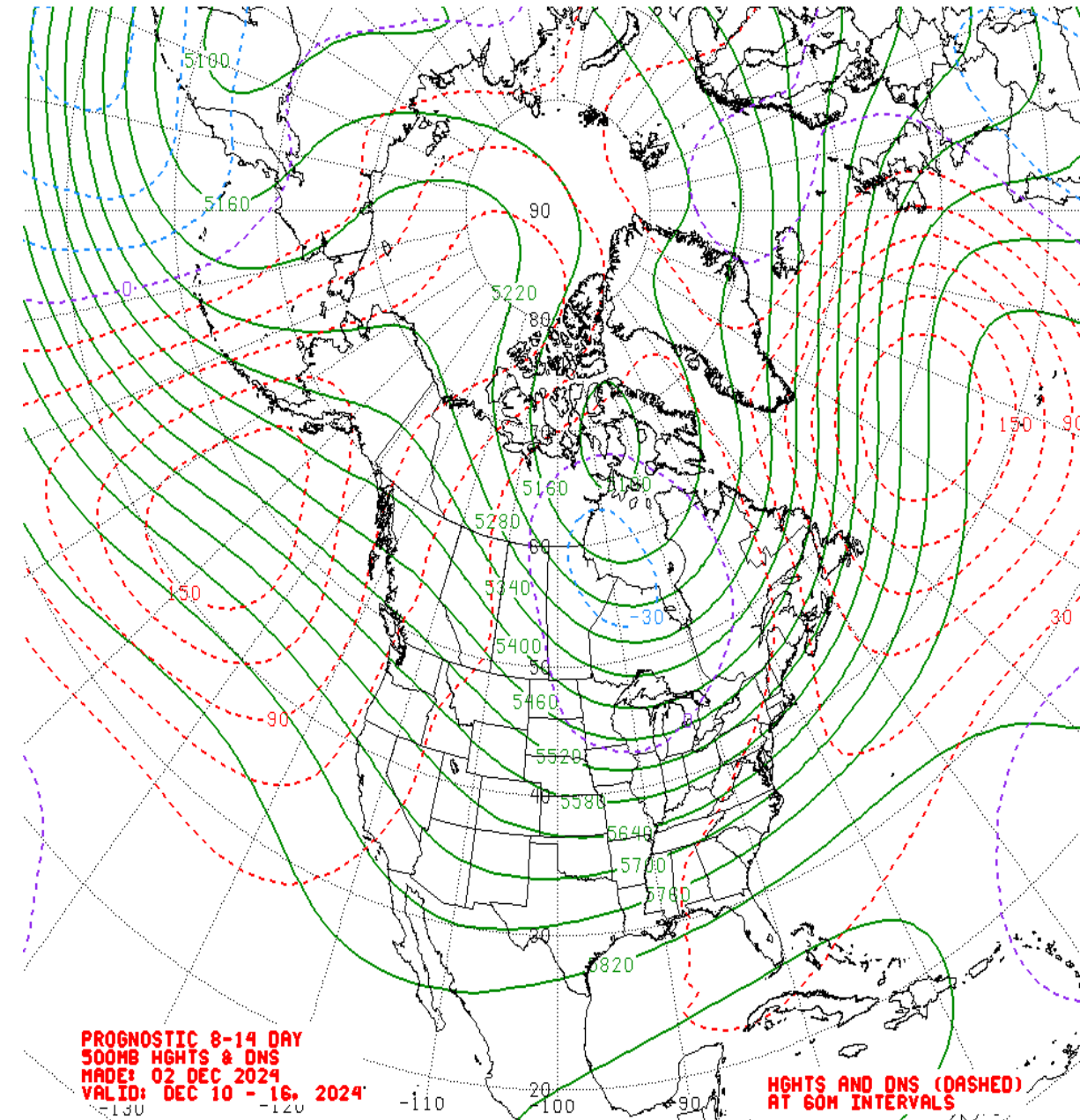
NDJ MJO Composite: CDAS 500-hPa Height (m)



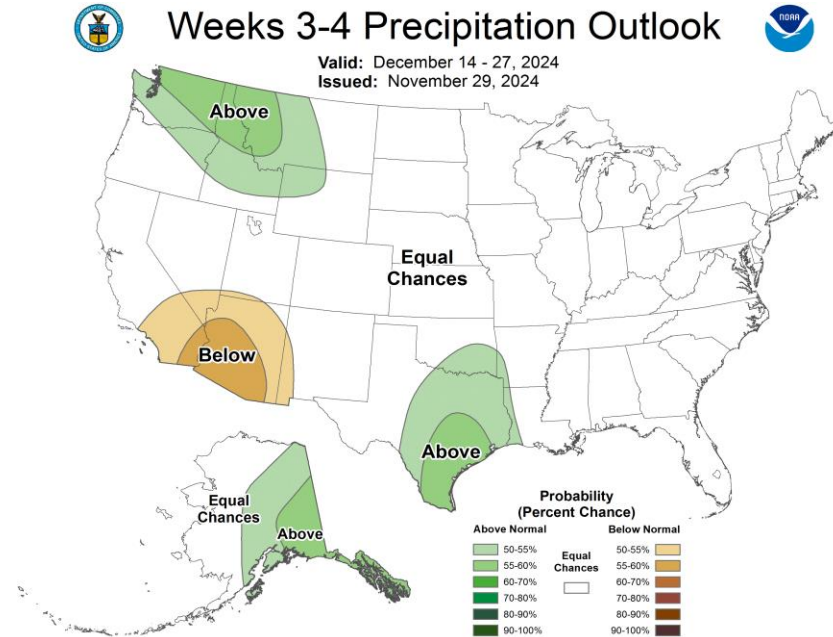
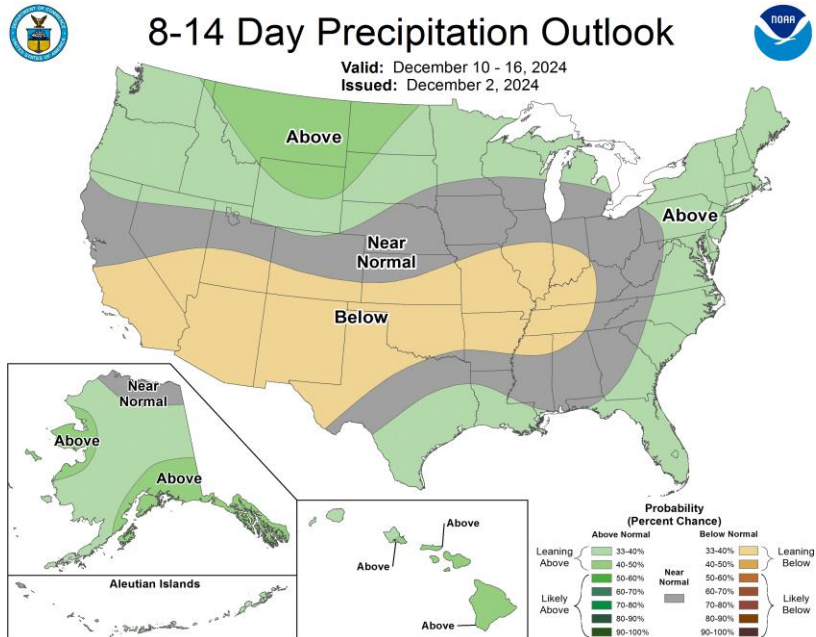
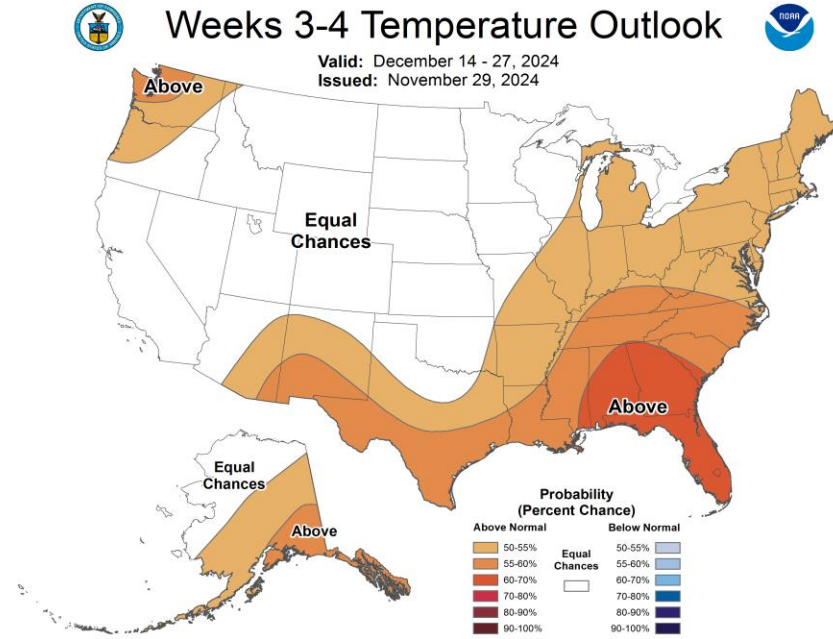
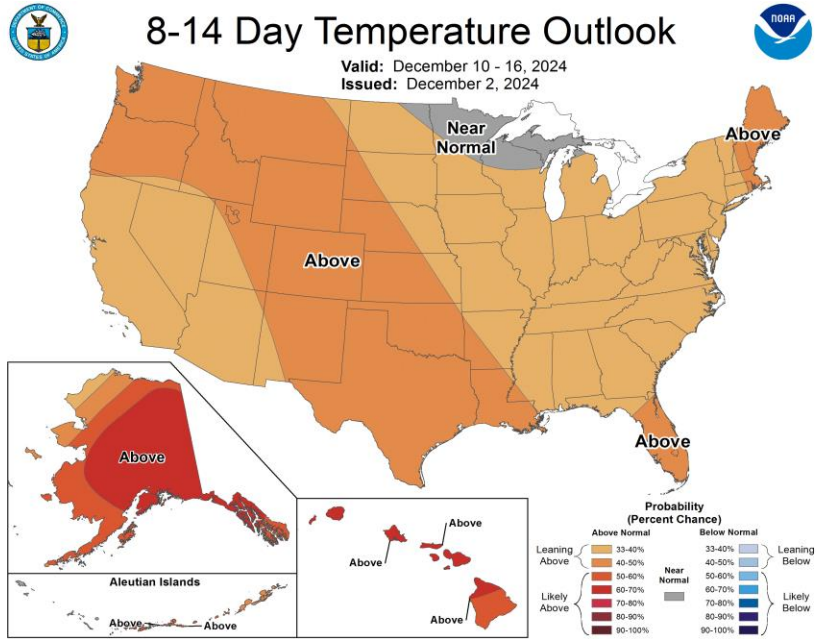
NDJ MJO Composite: GLBT (degC)



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



Official Temperature & Precipitation Forecasts:



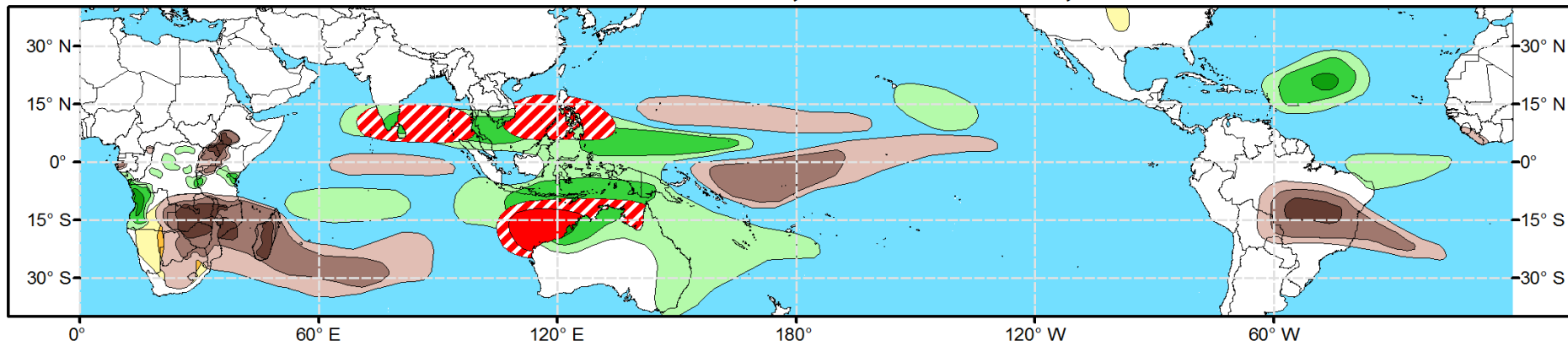


Global Tropics Hazards Outlook

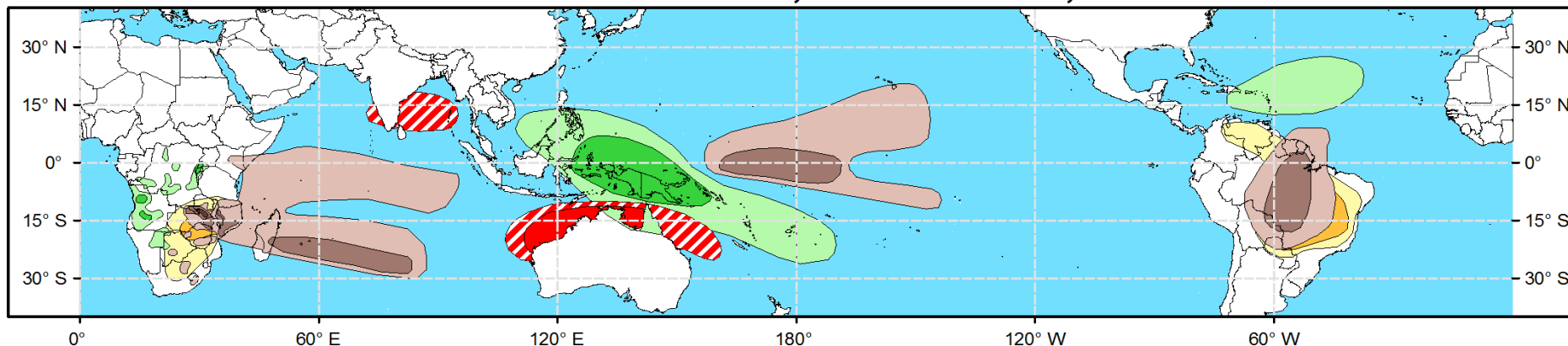
Climate Prediction Center



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