



Weeks 2-3 Global Tropics Hazards Outlook

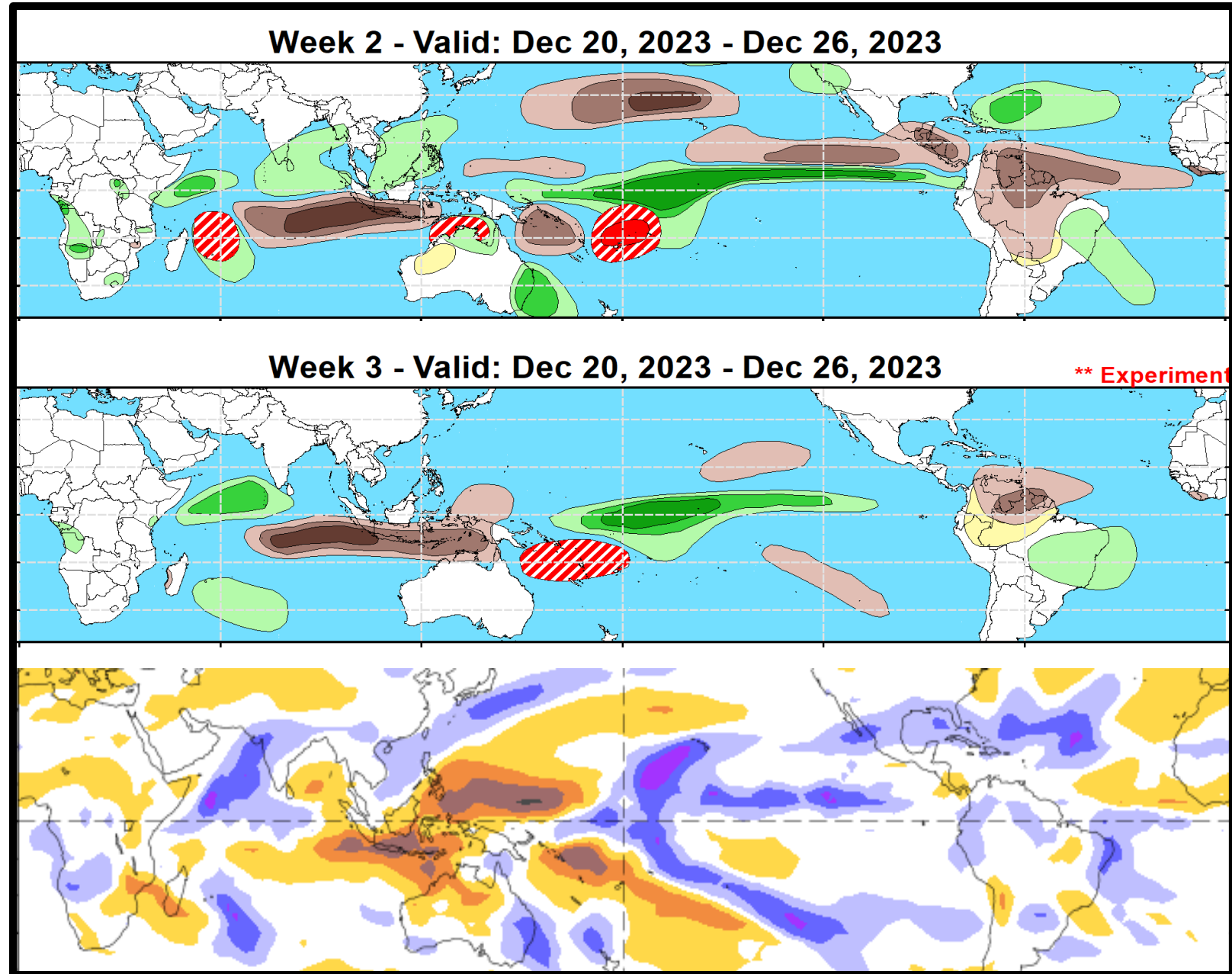
12/26/2023

Adam Allgood

NWS / NCEP / Climate Prediction Center

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

- No tropical cyclones formed during the past week.
- NW IO, South China Sea, SE Australia, and ENSO footprint were well forecast.
- A bit more suppression over the NW Pacific, SE IO, Bay of Bengal.



Synopsis of Climate Modes:

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

- 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 unusually active given the strong ENSO background state, with the enhanced phase now crossing the Western Hemisphere.
- Dynamical and statistical model guidance are in good agreement that the MJO will continue to be active, with the enhanced phase crossing the Indian Ocean during Week-2, and possibly the Maritime Continent during Week-3.
- The MJO will strongly interfere with the ongoing +IOD response over the Indian Ocean during Week-2, and the ENSO-suppressed signal over the MT during Week-2 and Week-3. El Niño enhanced precip across the central and East Pacific is favored to continue unabated.
- The MJO may influence the midlatitude pattern, with troughing in Week-2 over the eastern US. Other factors, including ENSO and a potential SSW event will present competing factors.

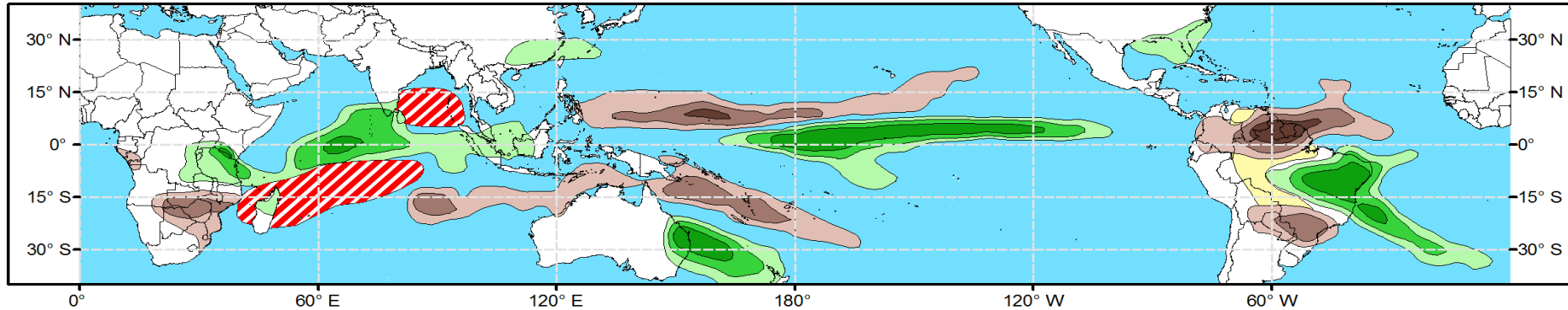
GTH Outlook:



Global Tropics Hazards Outlook Climate Prediction Center

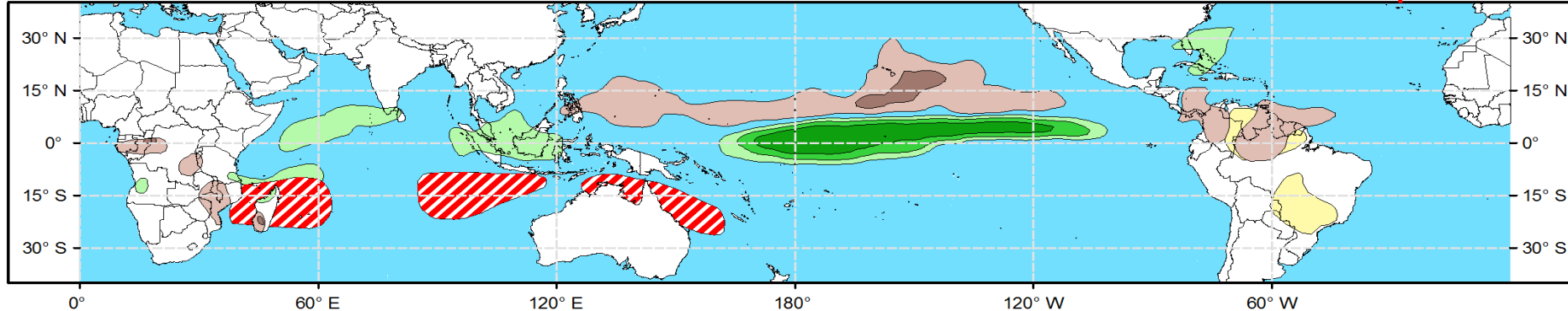


Week 2 - Valid: Jan 03, 2024 - Jan 09, 2024



Week 3 - Valid: Jan 10, 2024 - Jan 16, 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**



>50% >65% >80%

*7-day max temperatures in the
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**Below-Average
Temperatures Probability**



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*7-day min temperatures in the
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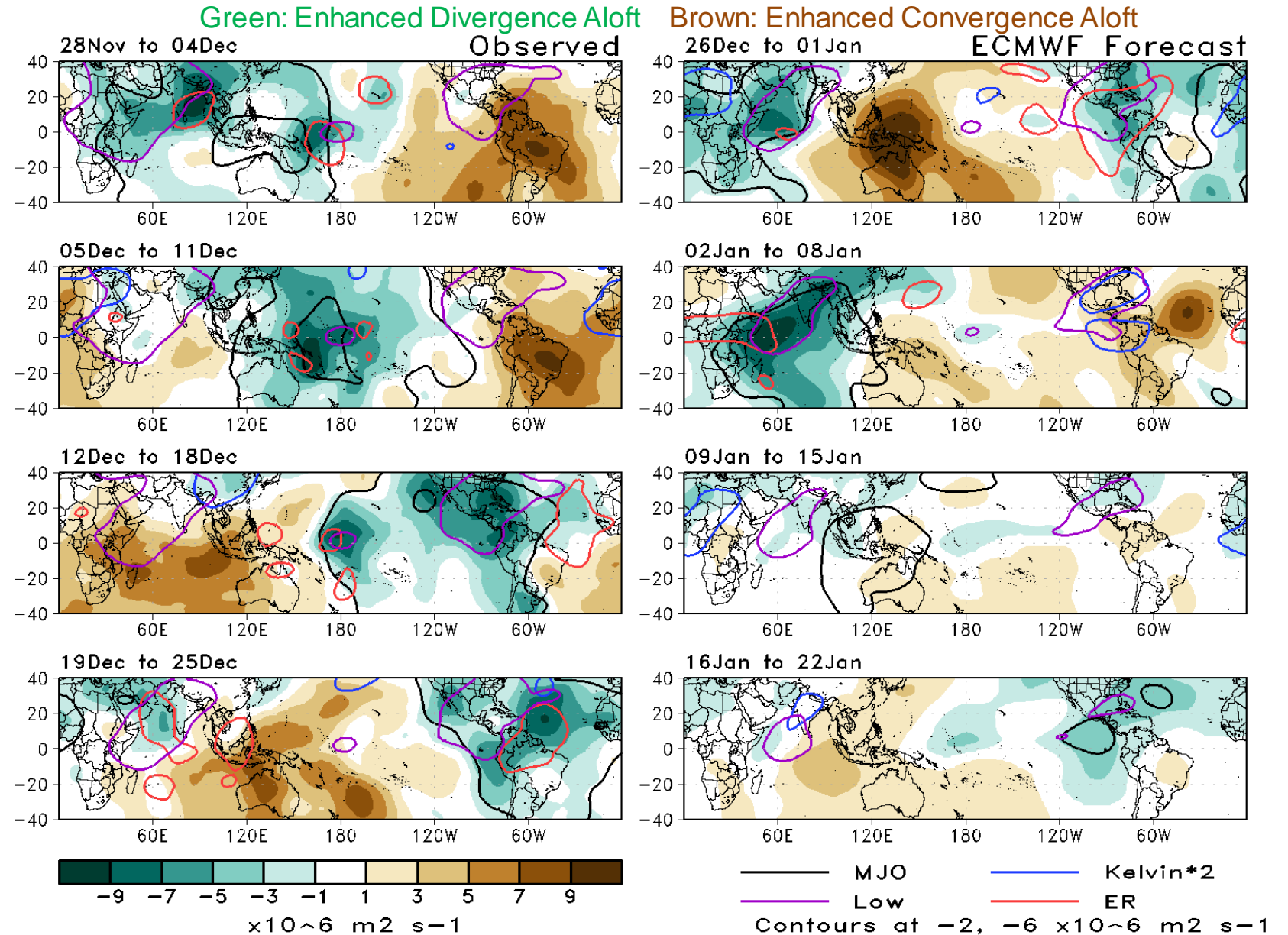
Issued: 12/26/2023

Forecaster: Allgood

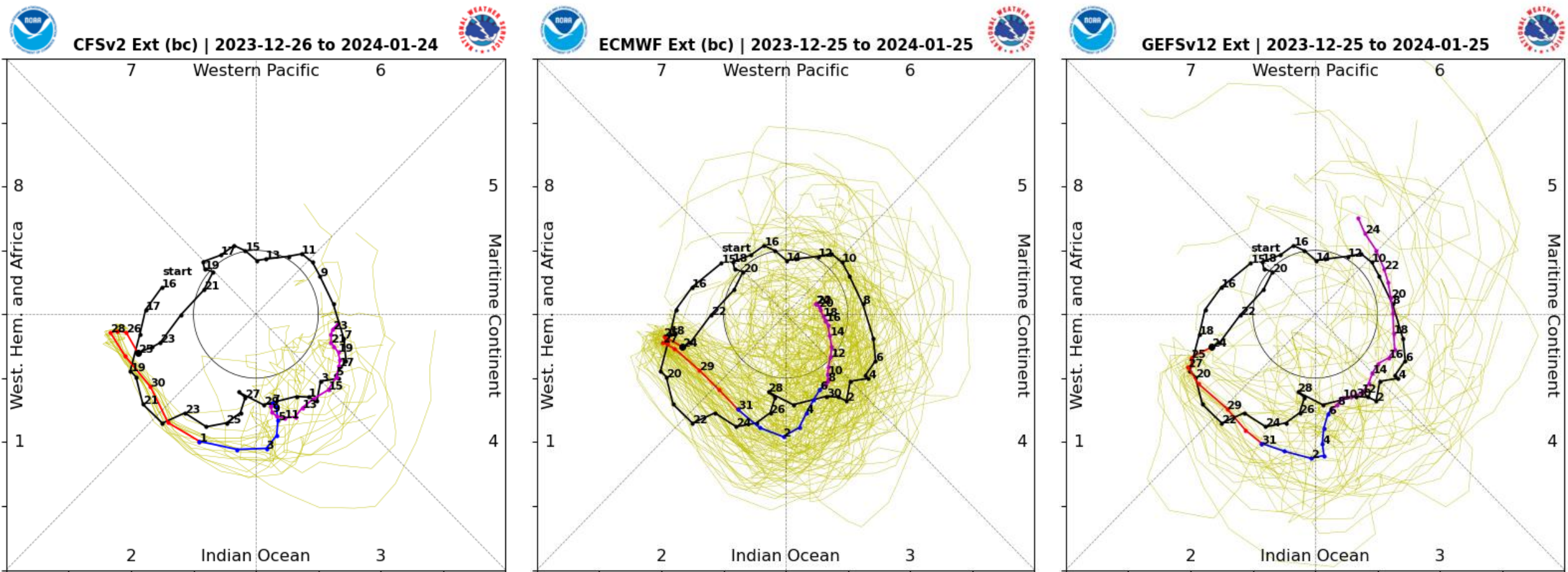
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200-hPa Velocity Potential Anomaly Maps:

- The upper-level VP anomaly field reflects robust MJO activity during late November and December.
- The ECMWF favors continued robust MJO activity during Weeks 1-2, with uncertainty increasing by Week-3 as the MJO enhanced phase interferes with the ENSO-suppressed regime over the Maritime Continent.
- The GEFS maintains robust MJO activity through Week-4, with faster ensemble members returning the signal to the West Pacific.

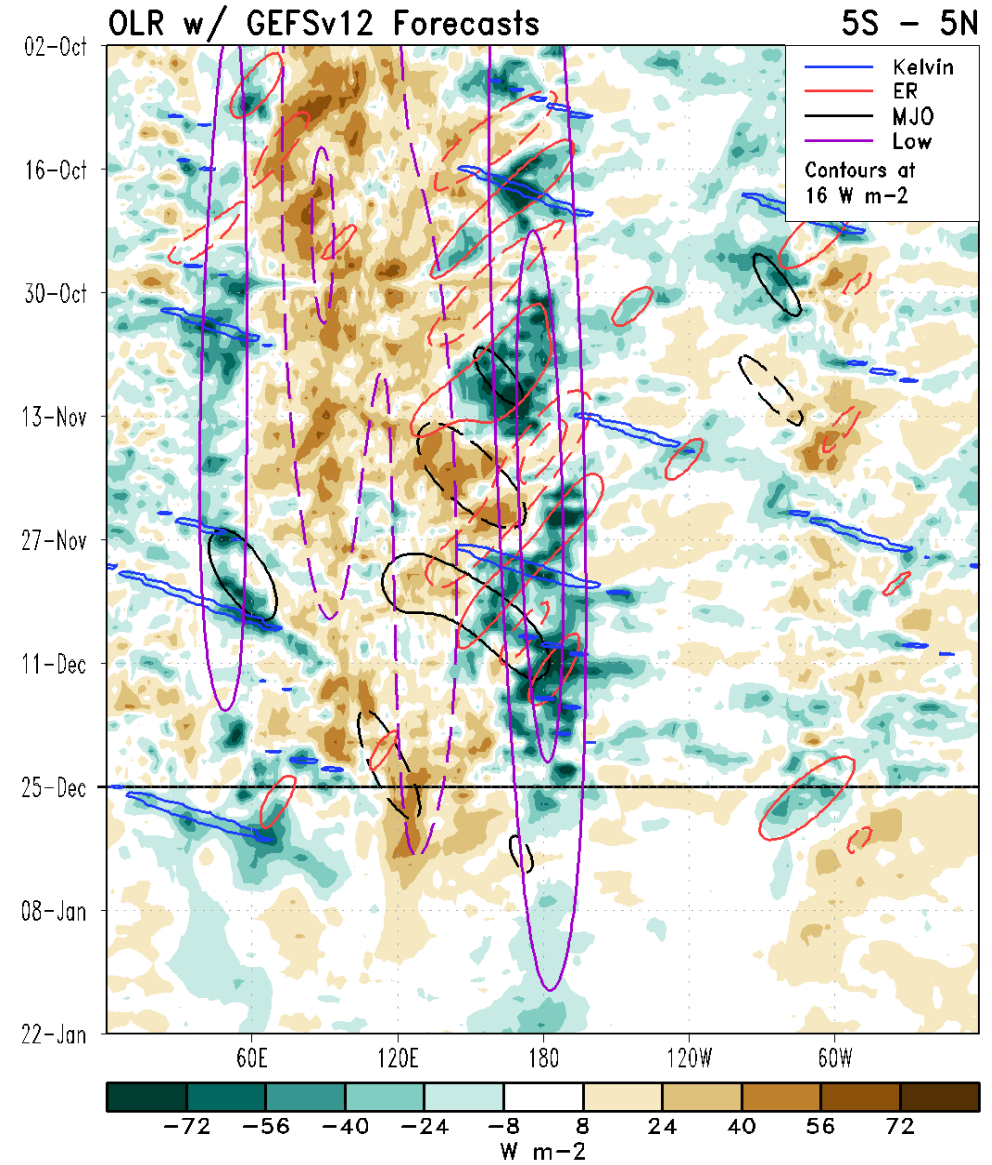
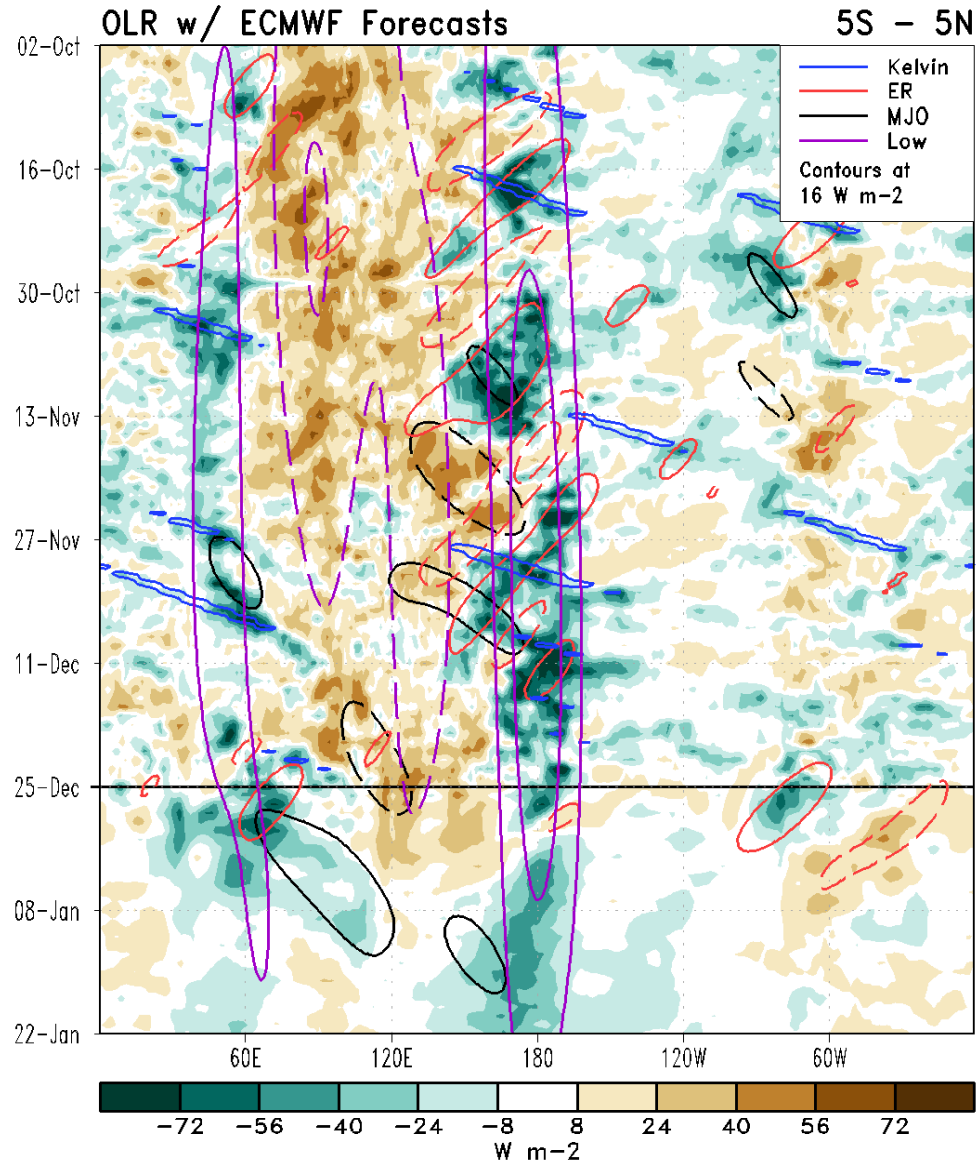


RMM Index Observations & Forecasts:



- Dynamical models are in remarkably good agreement supporting continued MJO activity over the next two weeks, with the enhanced phase crossing the Indian Ocean.
- While the MJO remains active in Weeks 3-4, the ECMWF signal is somewhat weaker than the GEFS (highly amplified).
- Both the ECMWF and GEFS have some members returning to the Pacific by Week-4.

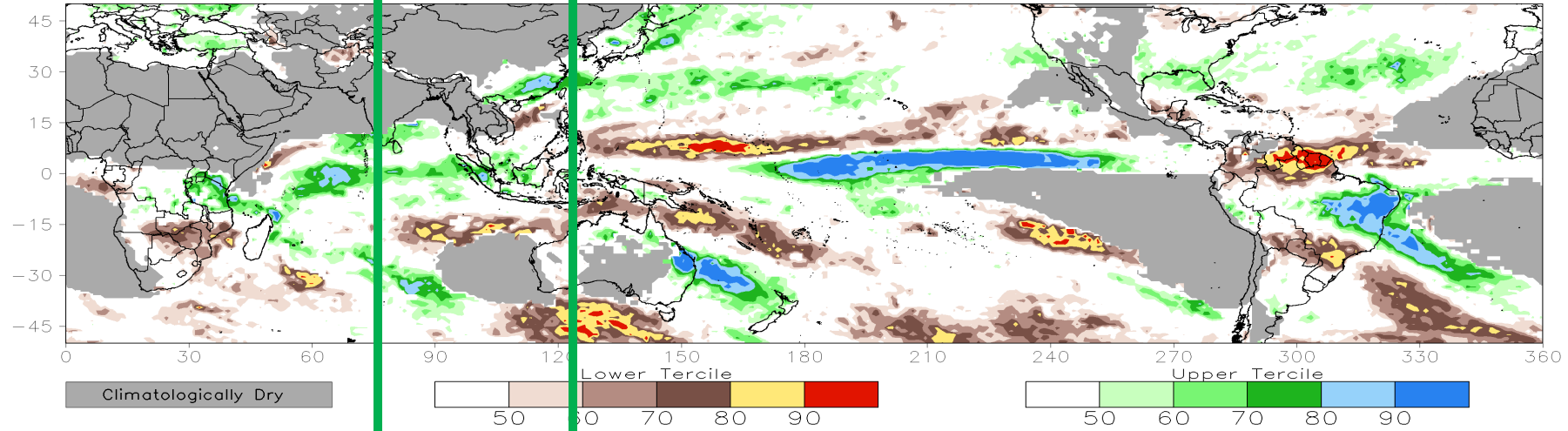
Outgoing Longwave Radiation (OLR) Anomaly Time/Lon Plots:



Consolidated Probabilistic Precipitation: Weeks 2 & 3

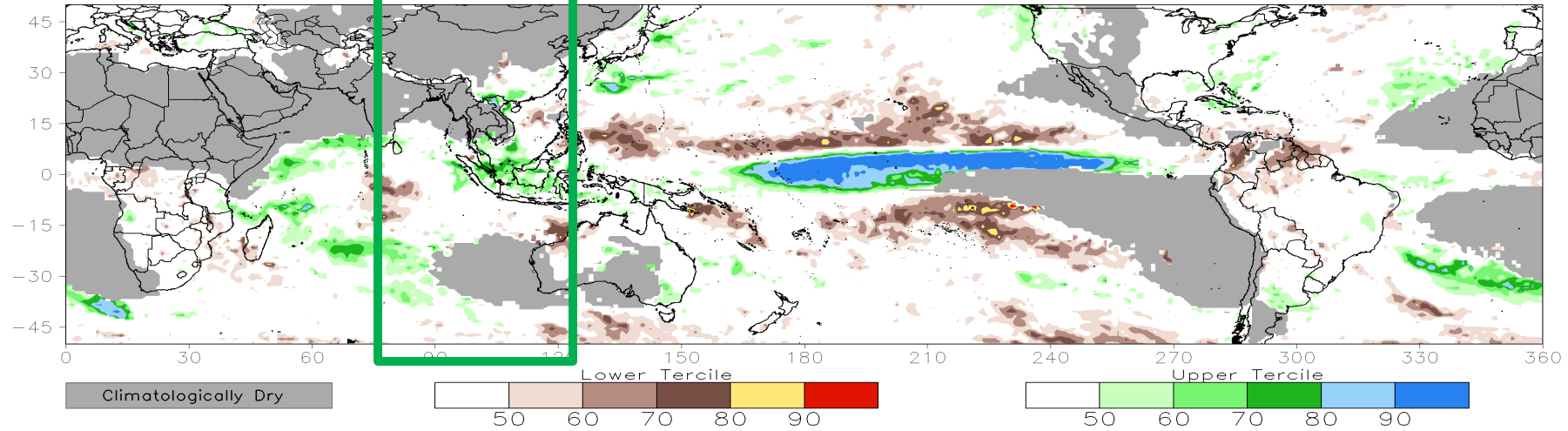
CONS 00z: Week2 Probability for Total Rainfall Below(Above) Lower(Upper) Tercile (%)

Valid: 03Jan2024–09Jan2024



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

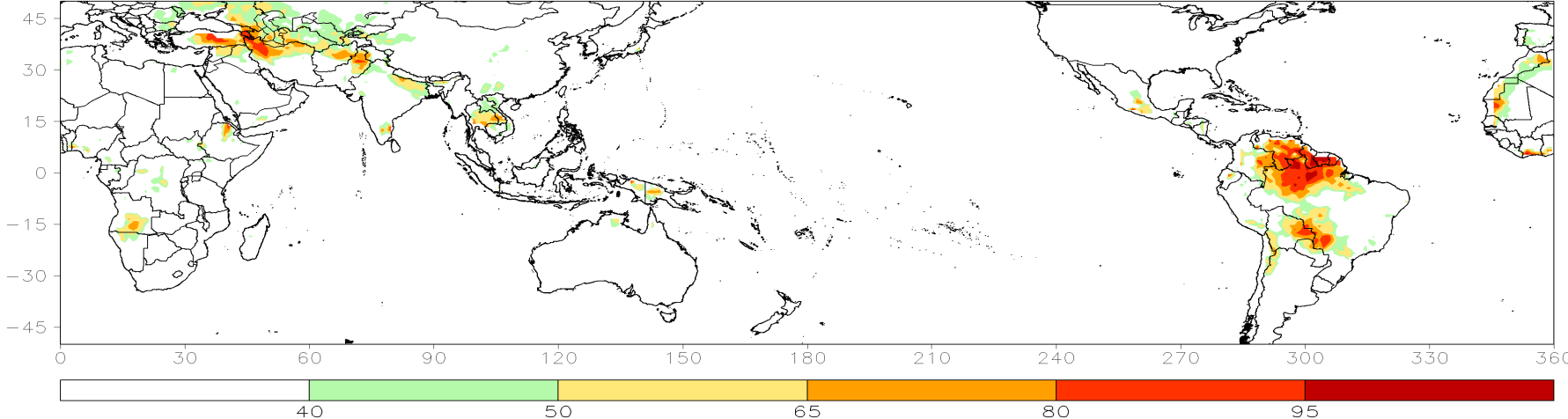
Valid: 10Jan2024–16Jan2024



Consolidated Probabilistic Temperatures: Week-2

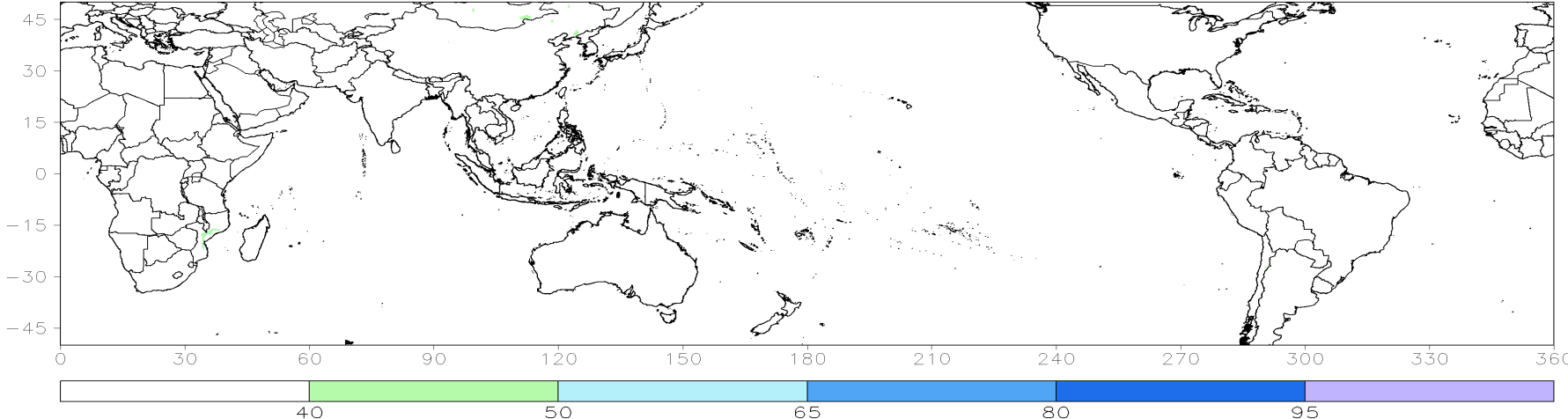
CFS/ECMWF/GEFS Correlation Weighted: Week2 Probability for Tmax Above Upper Tercile (%)

Valid: 03Jan2024-09Jan2024



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

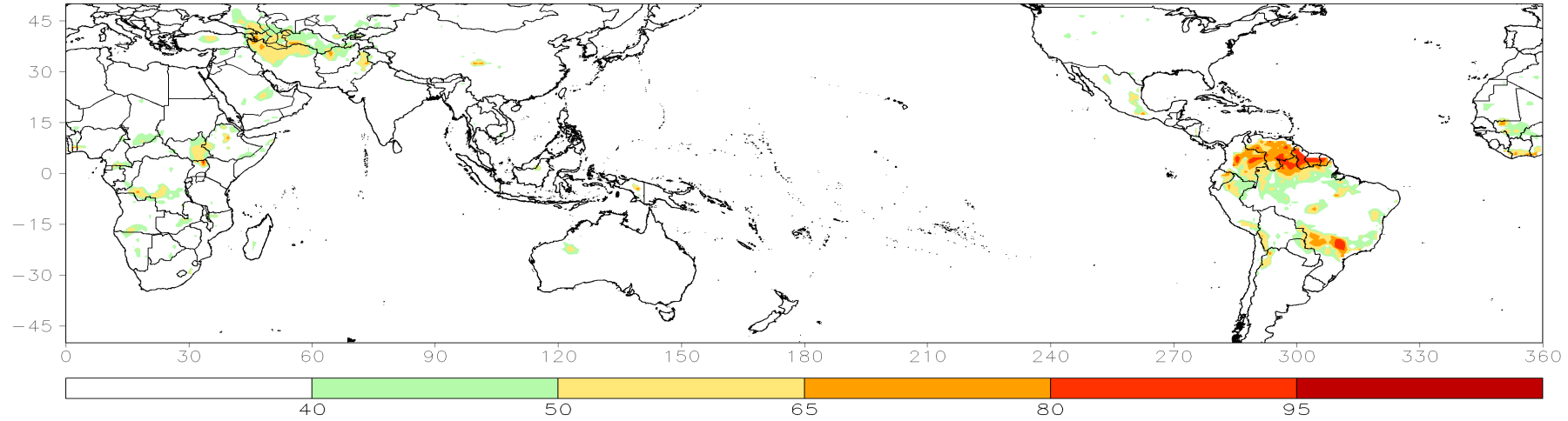
Valid: 03Jan2024-09Jan2024



Consolidated Probabilistic Temperatures: Week-3

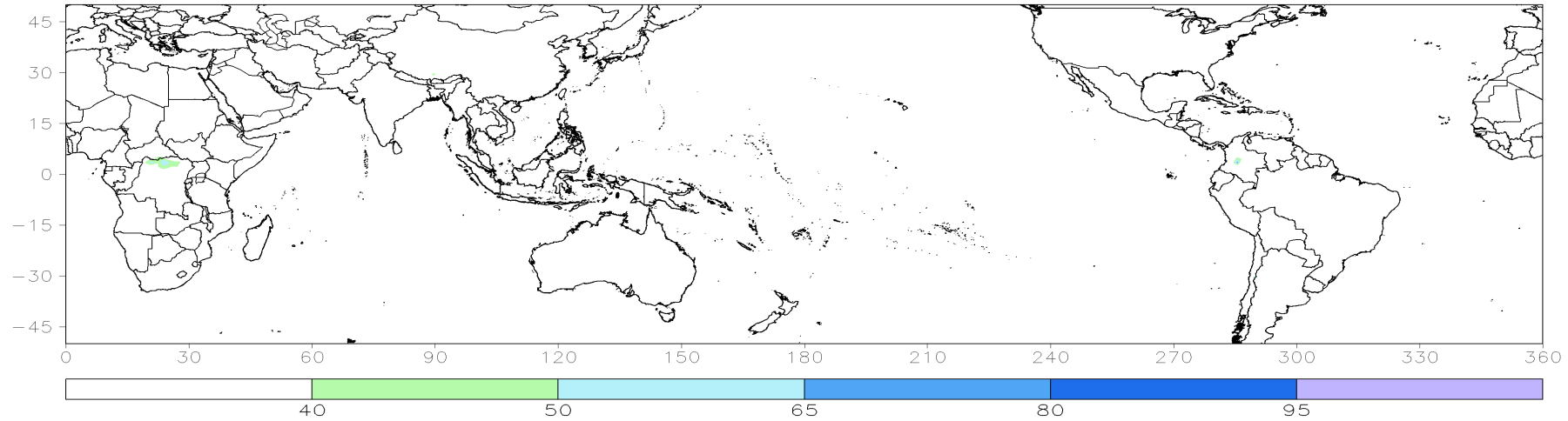
CFS/ECMWF/GEFS Correlation Weighted: Week3 Probability for Tmax Above Upper Tercile (%)

Valid: 10Jan2024–16Jan2024



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

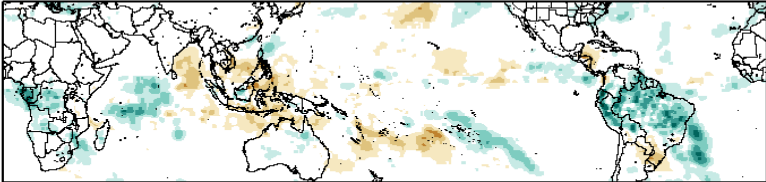
Valid: 10Jan2024–16Jan2024



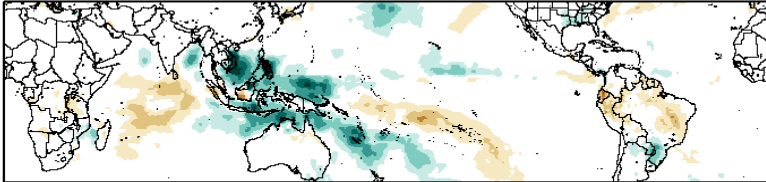
Historical Precipitation Anomalies By MJO Phase:

NDJ MJO Composite: GPCP1DD (mm/day)

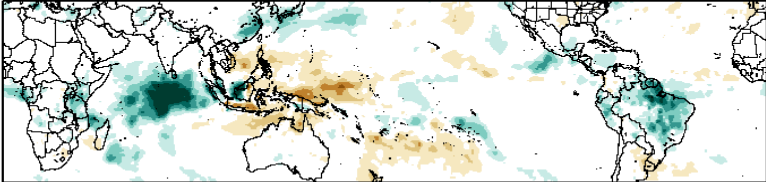
Phase 1



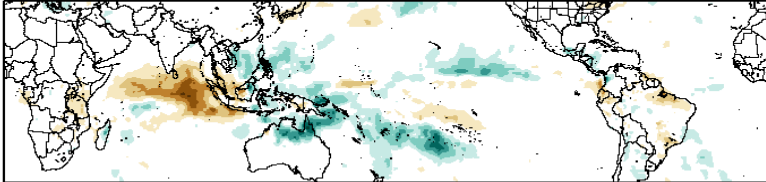
Phase 5



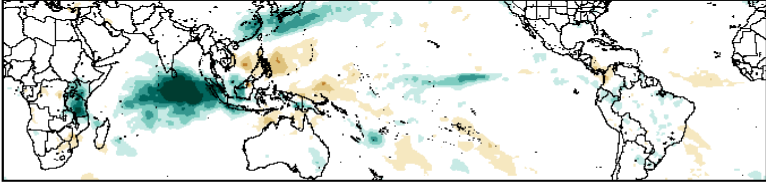
Phase 2



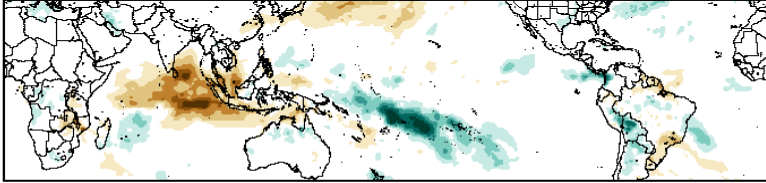
Phase 6



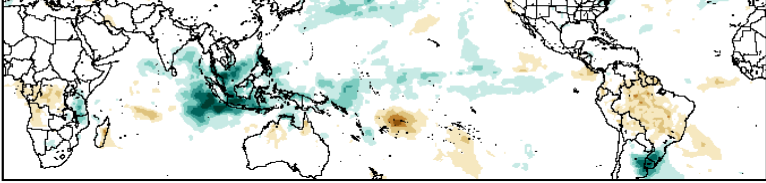
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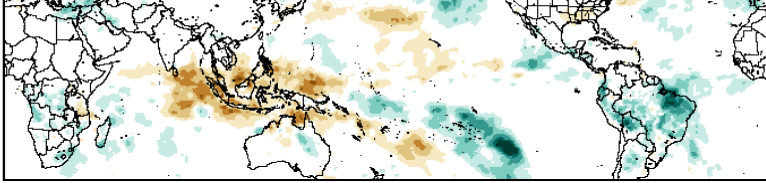
Phase 7



Phase 4

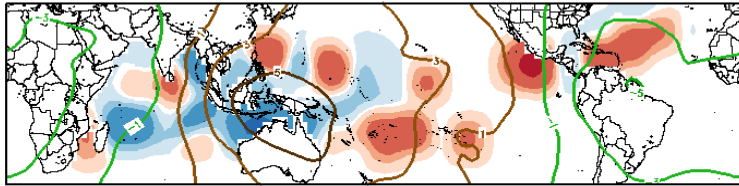


Phase 8

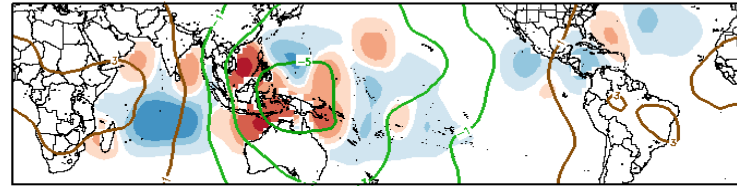


Historical TC Origin Anomalies By MJO Phase & Weeks 2+3 Genesis Climo:

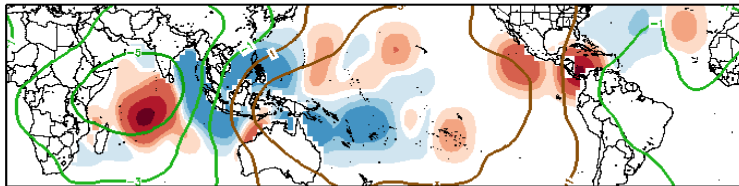
NDJ MJO Composite: Mean TC Origin Density Anomaly ($\#TCs/277km^2*100$)
w/ NDJ CHI200 ($\times 10^6 m^2 s^{-1}$) / Contours every $2 \times 10^6 m^2 s^{-1}$



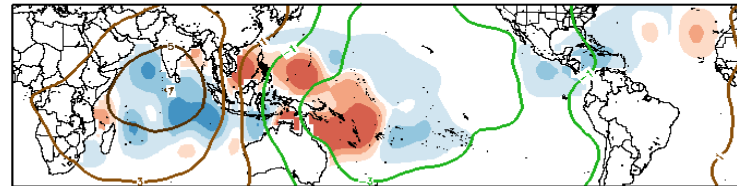
Phase 1



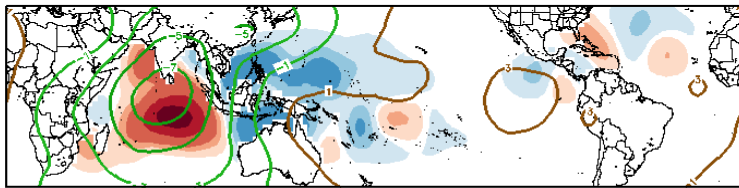
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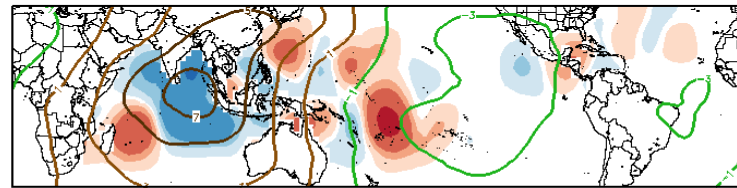
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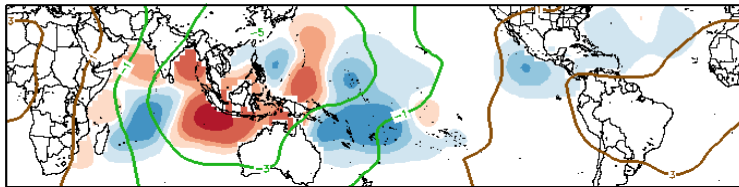
Phase 6



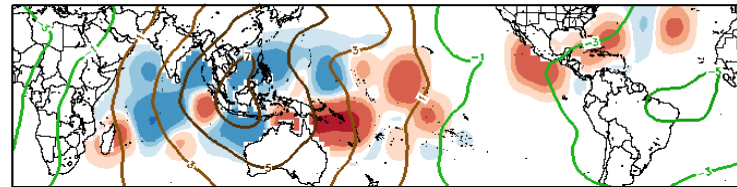
Phase 3



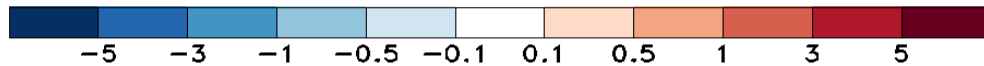
Phase 7



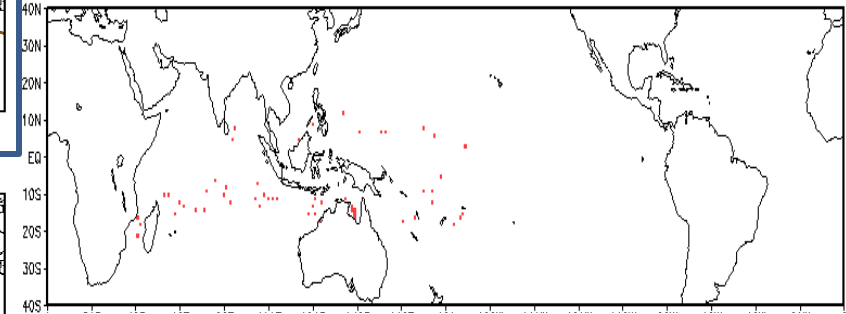
Phase 4



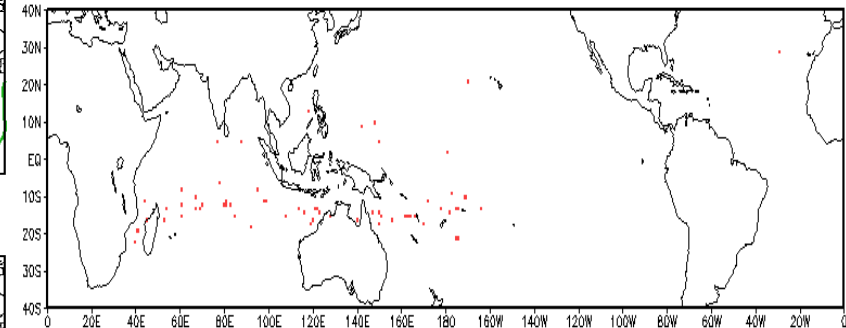
Phase 8



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



Observed TC Genesis, 1979-2021
7-day Period 0110 to 0116

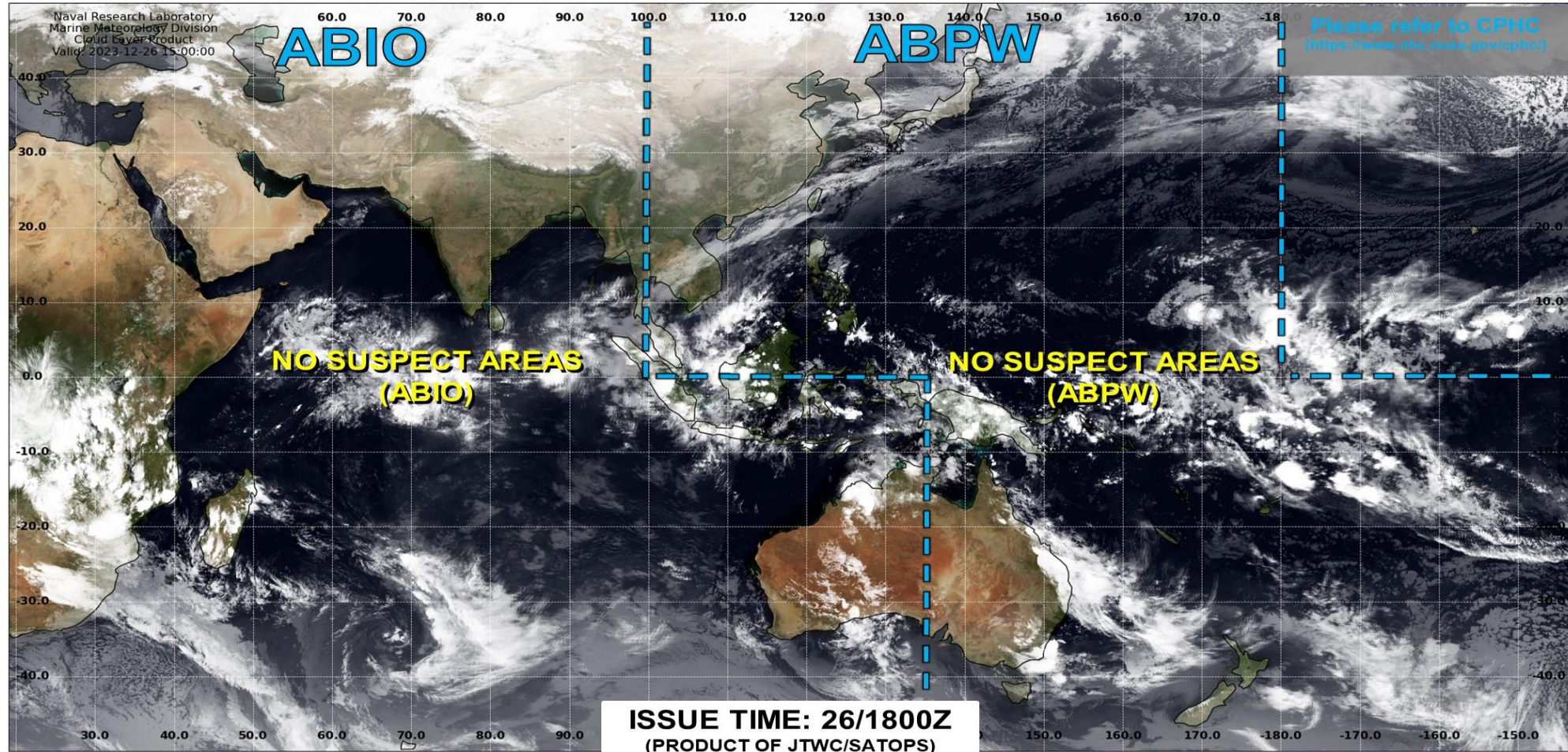


Experimental

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)

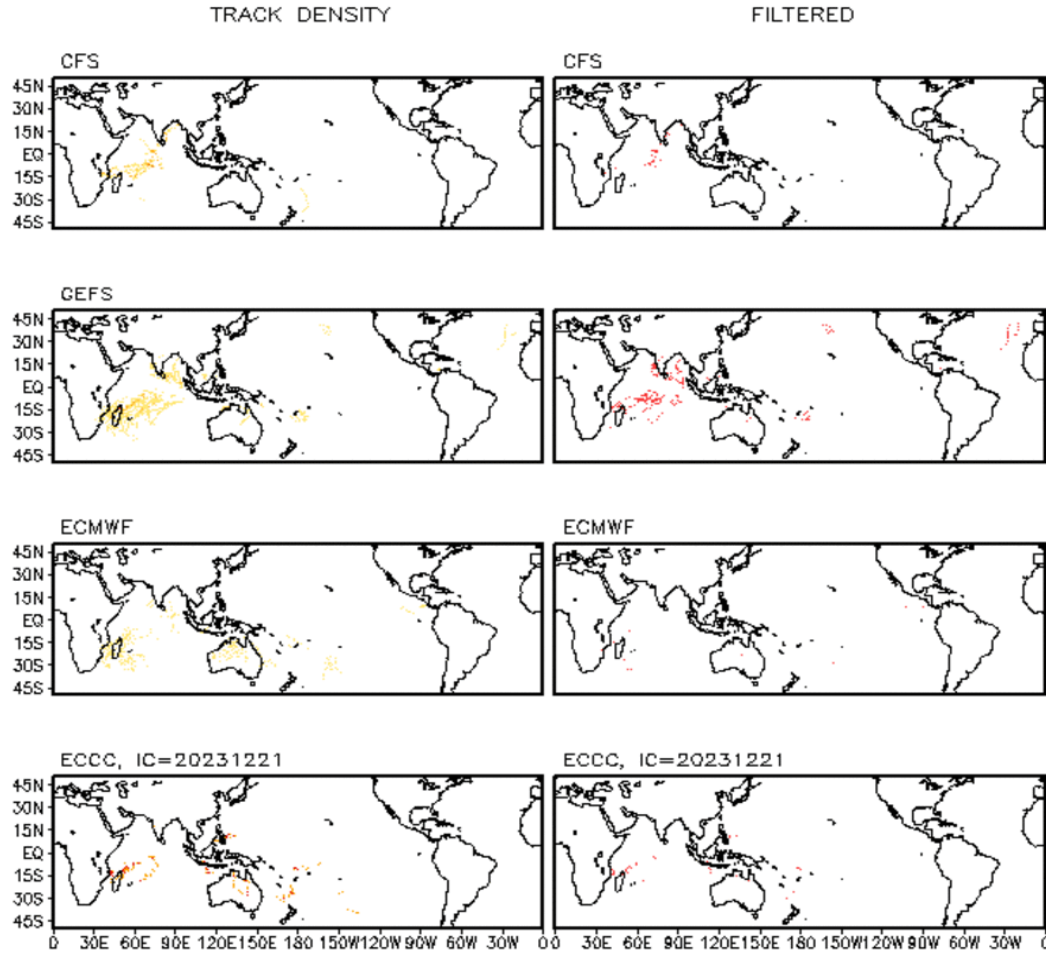


Monitoring for potential transition to TC. Invest label color denotes tropical transition probability

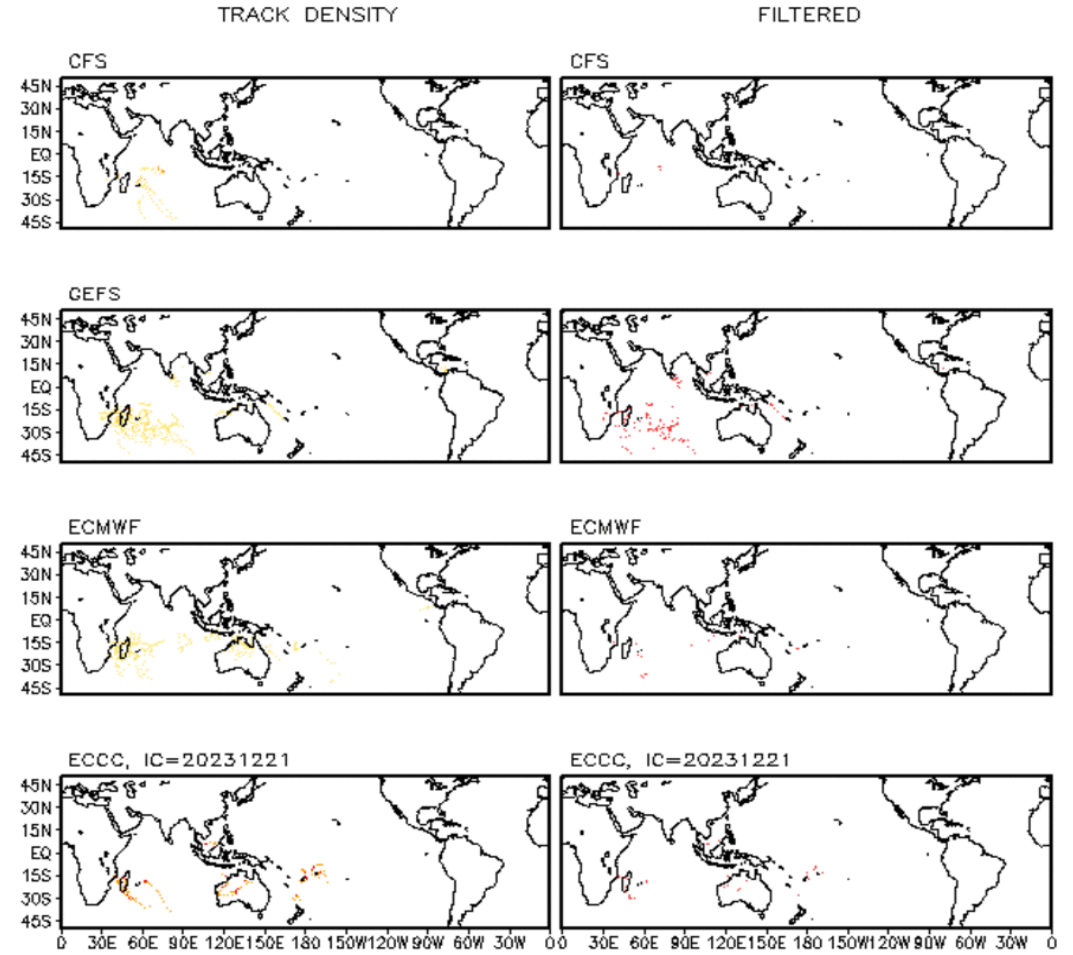


Multi-Model TC Track Densities: Weeks 2+3

Storm Track Density Distribution, IC=20231225
Week 2 Forecast: 0103-0109

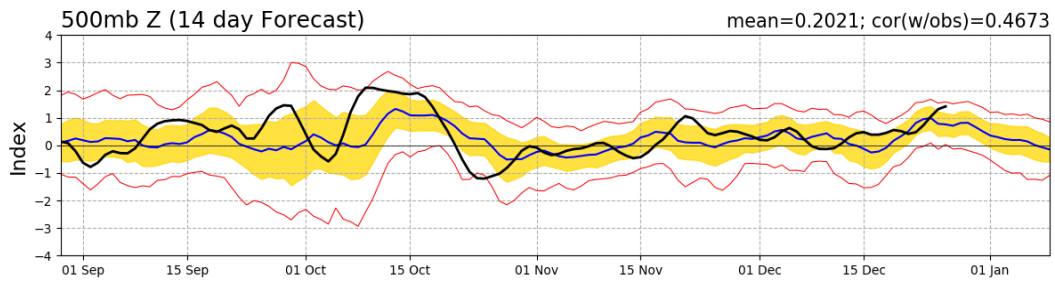
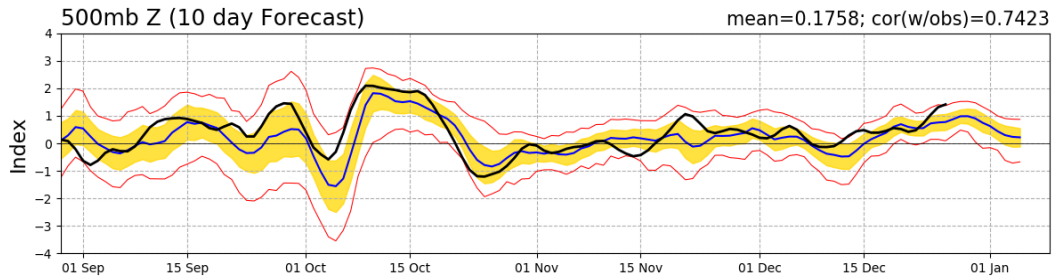
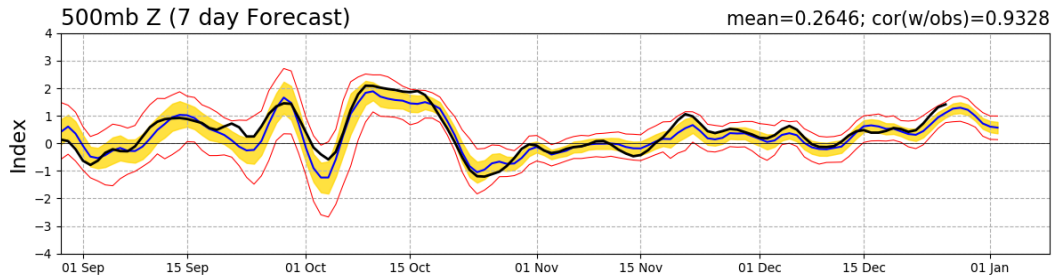
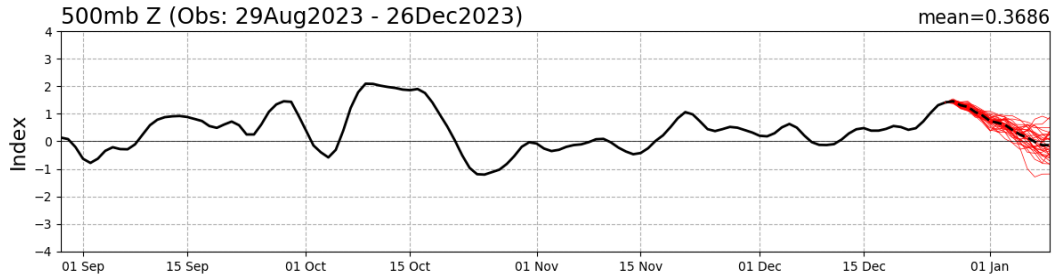


Storm Track Density Distribution, IC=20231225
Week 3 Forecast: 0110-0116

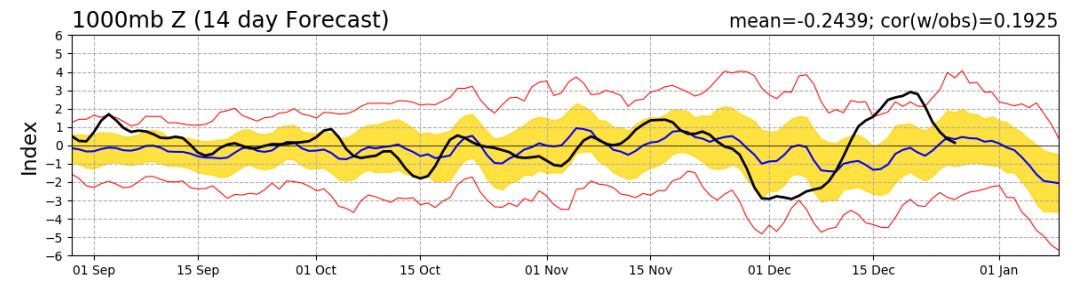
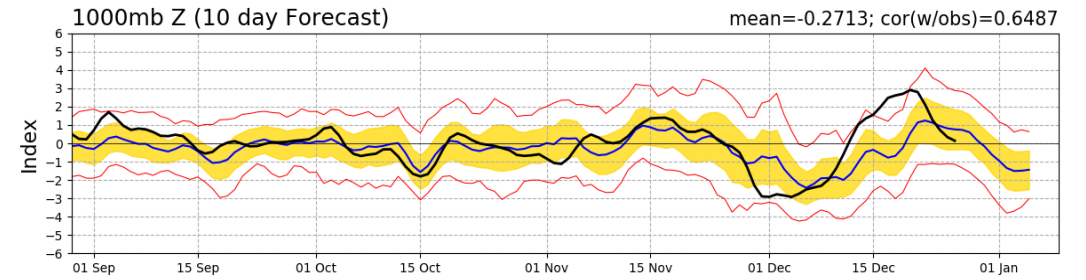
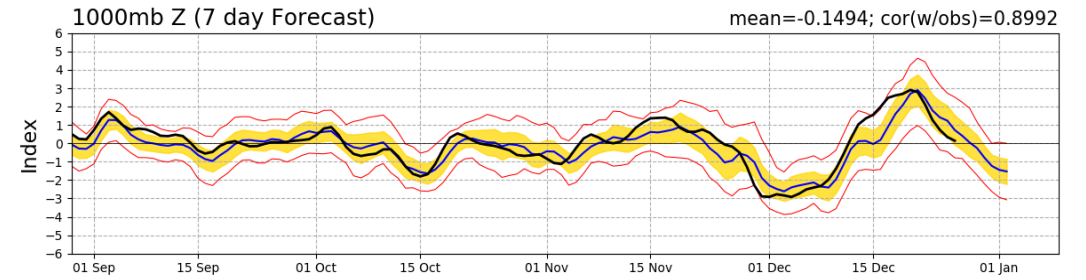
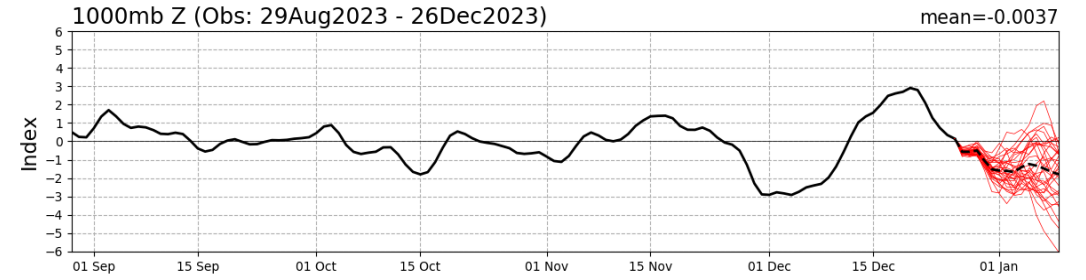


Teleconnection Indices: PNA / AO:

PNA Index: Observed & GEFS Forecasts

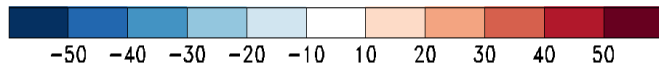
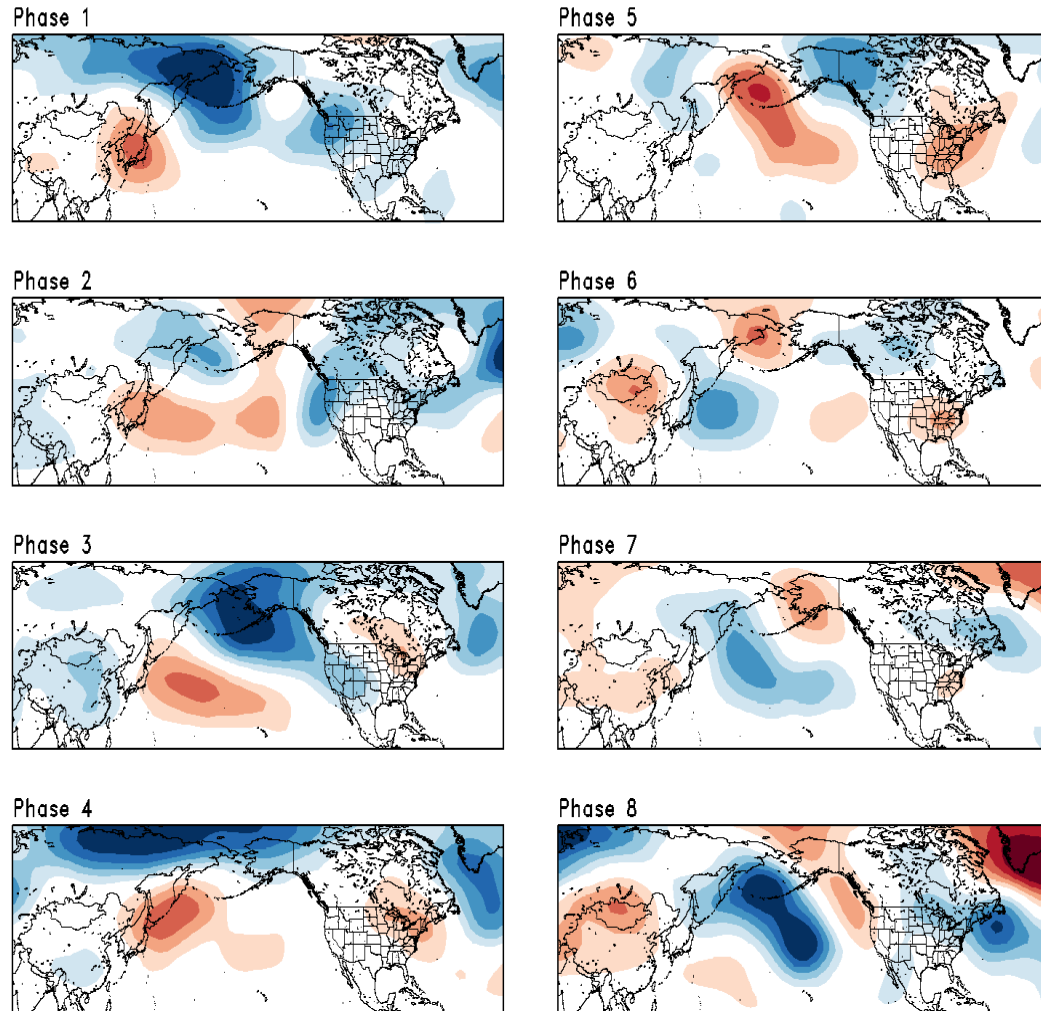


AO Index: Observed & GEFS Forecasts

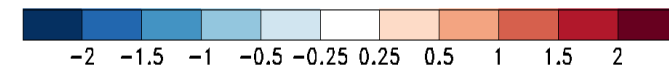
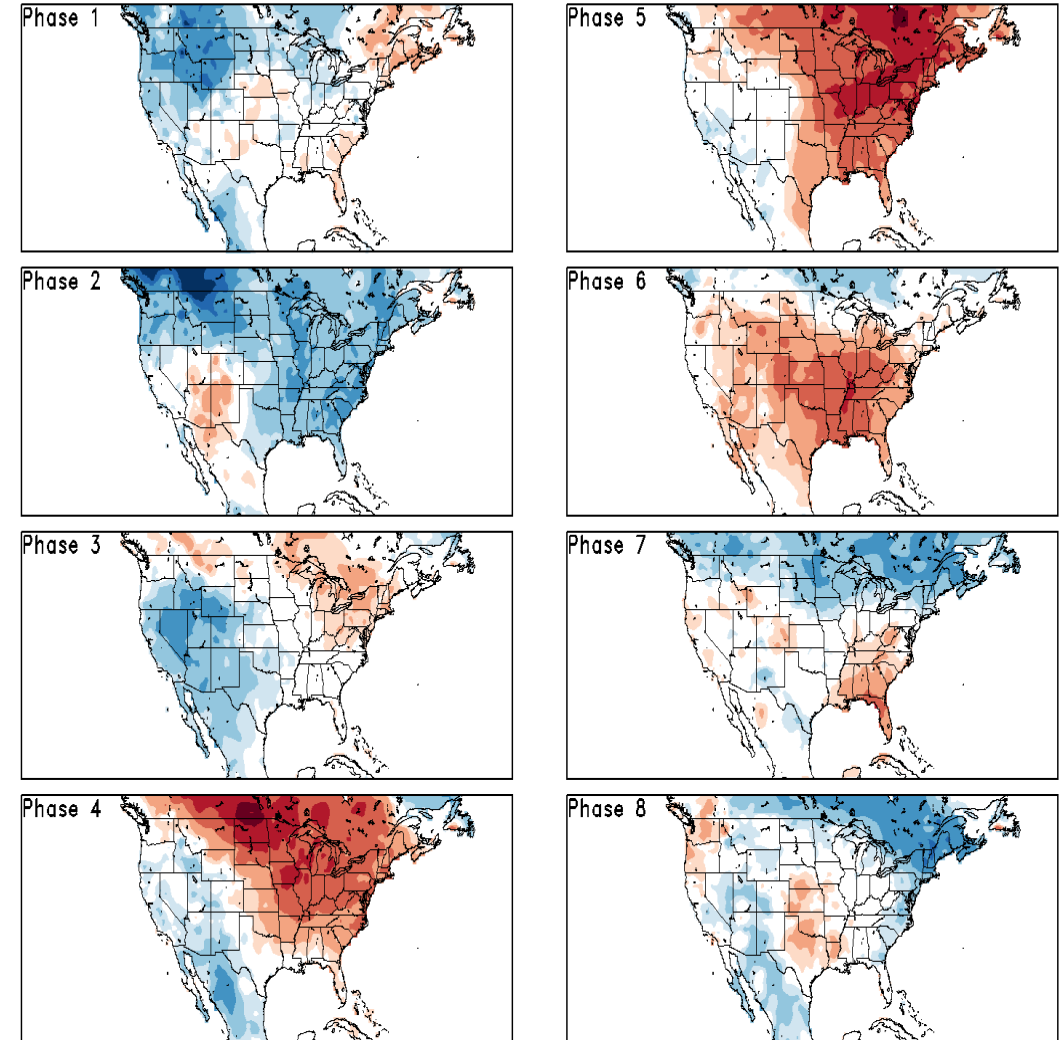


Historical 500-hPa Height & U.S. Temperatures By MJO Phase:

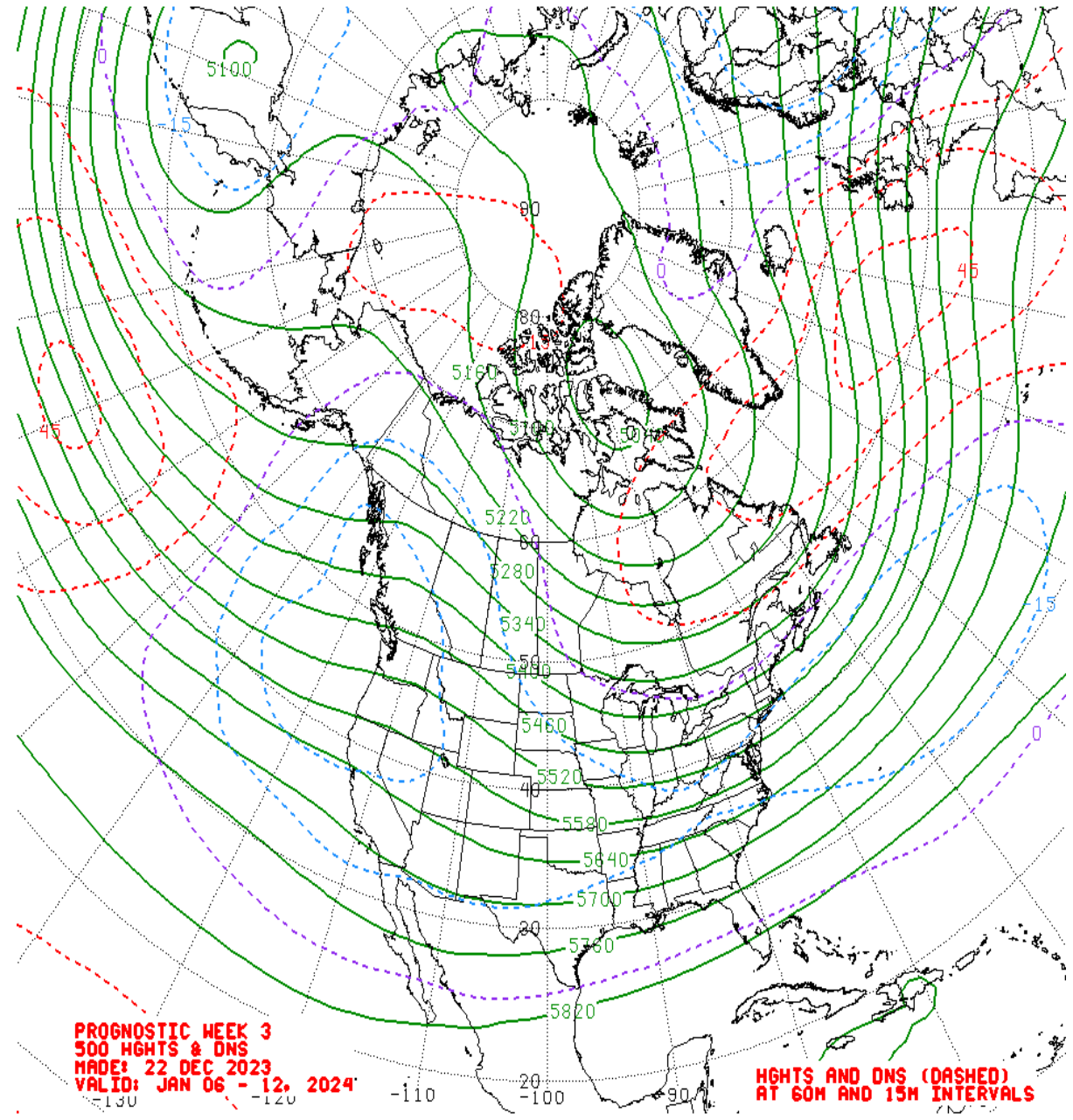
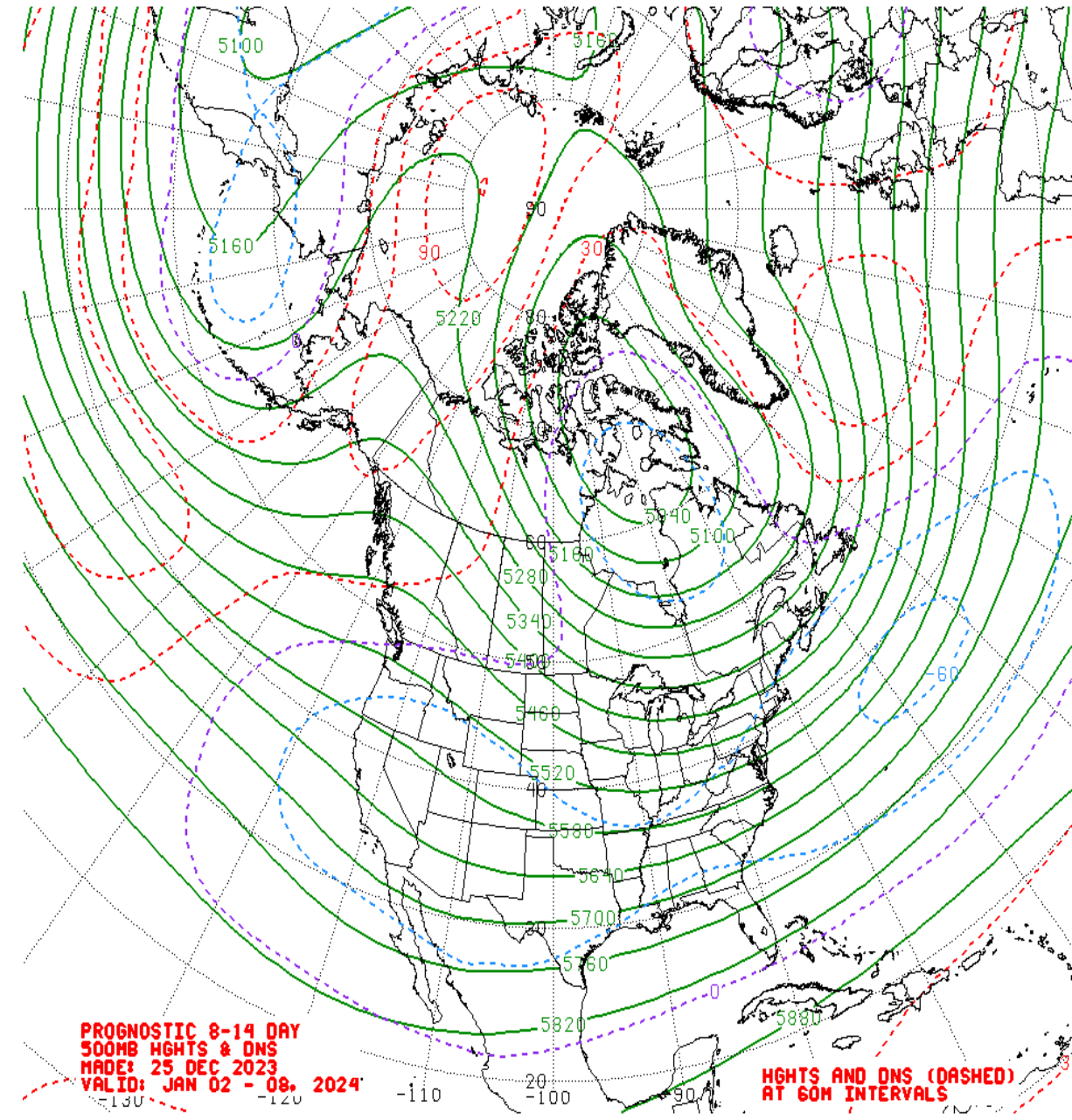
NDJ MJO Composite: CDAS 500-hPa Height (m)



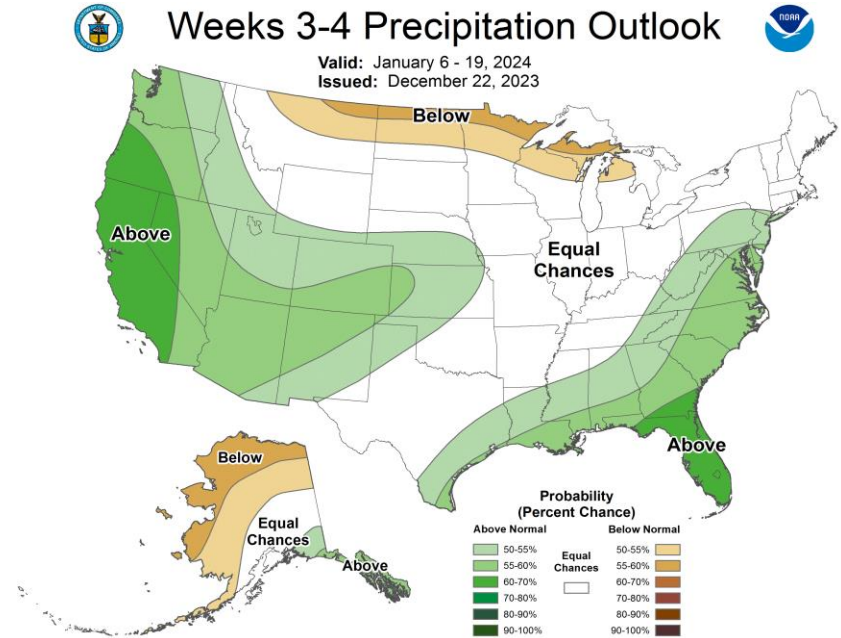
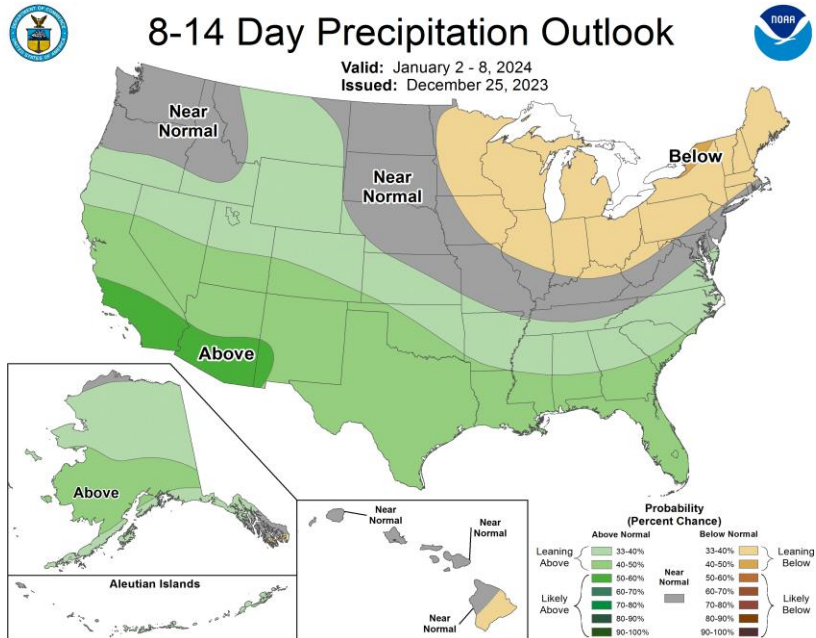
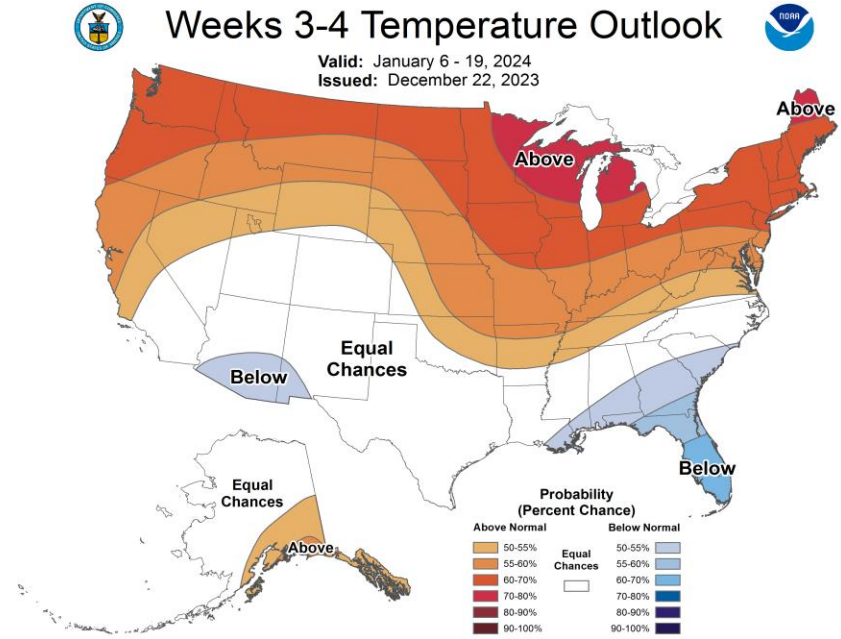
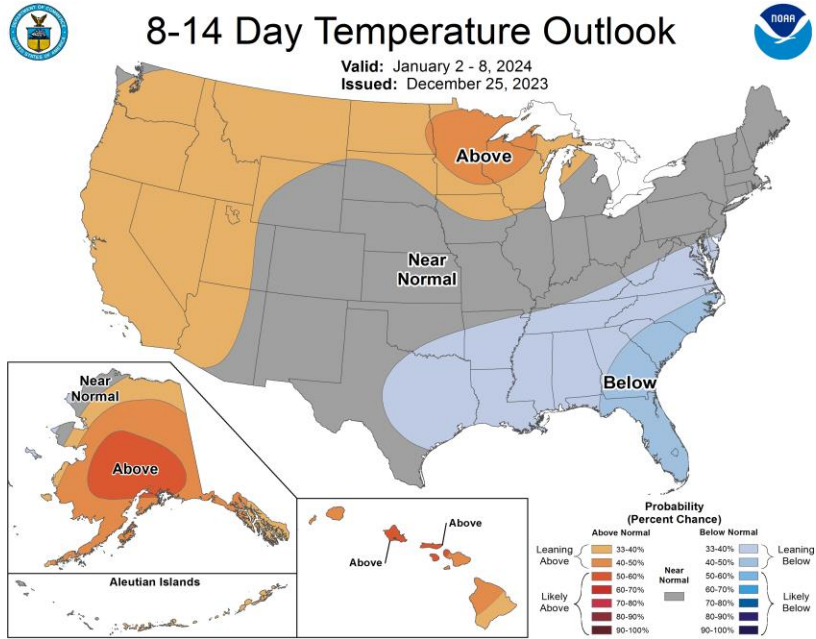
NDJ MJO Composite: GLBT (degC)



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



Official Temperature & Precipitation Forecasts:



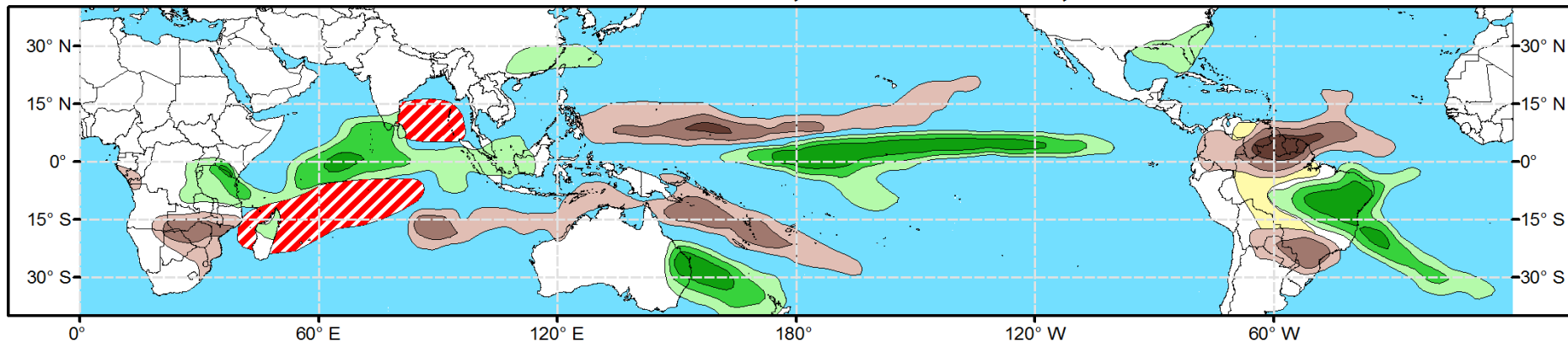


Global Tropics Hazards Outlook

Climate Prediction Center

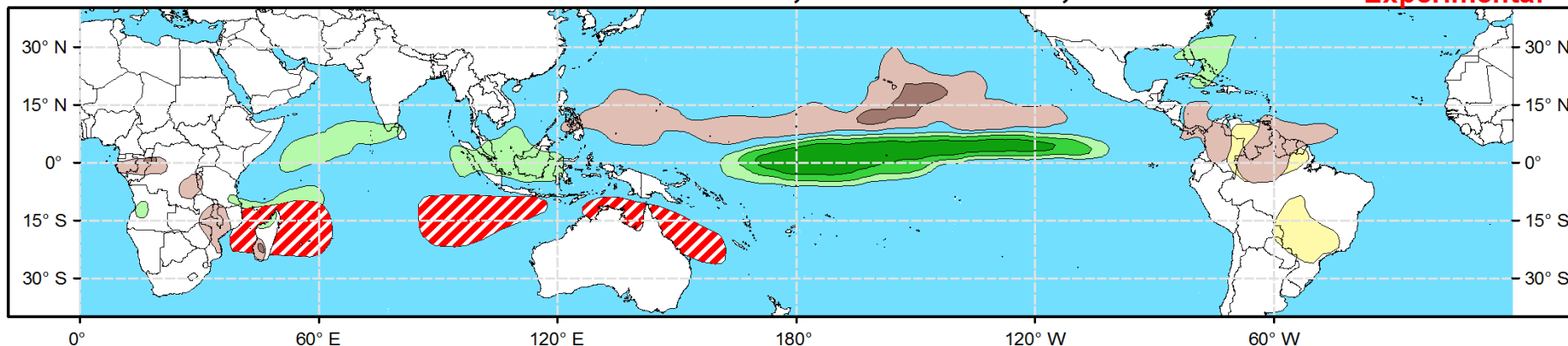


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