



Weeks 2-3 Global Tropics Hazards Outlook

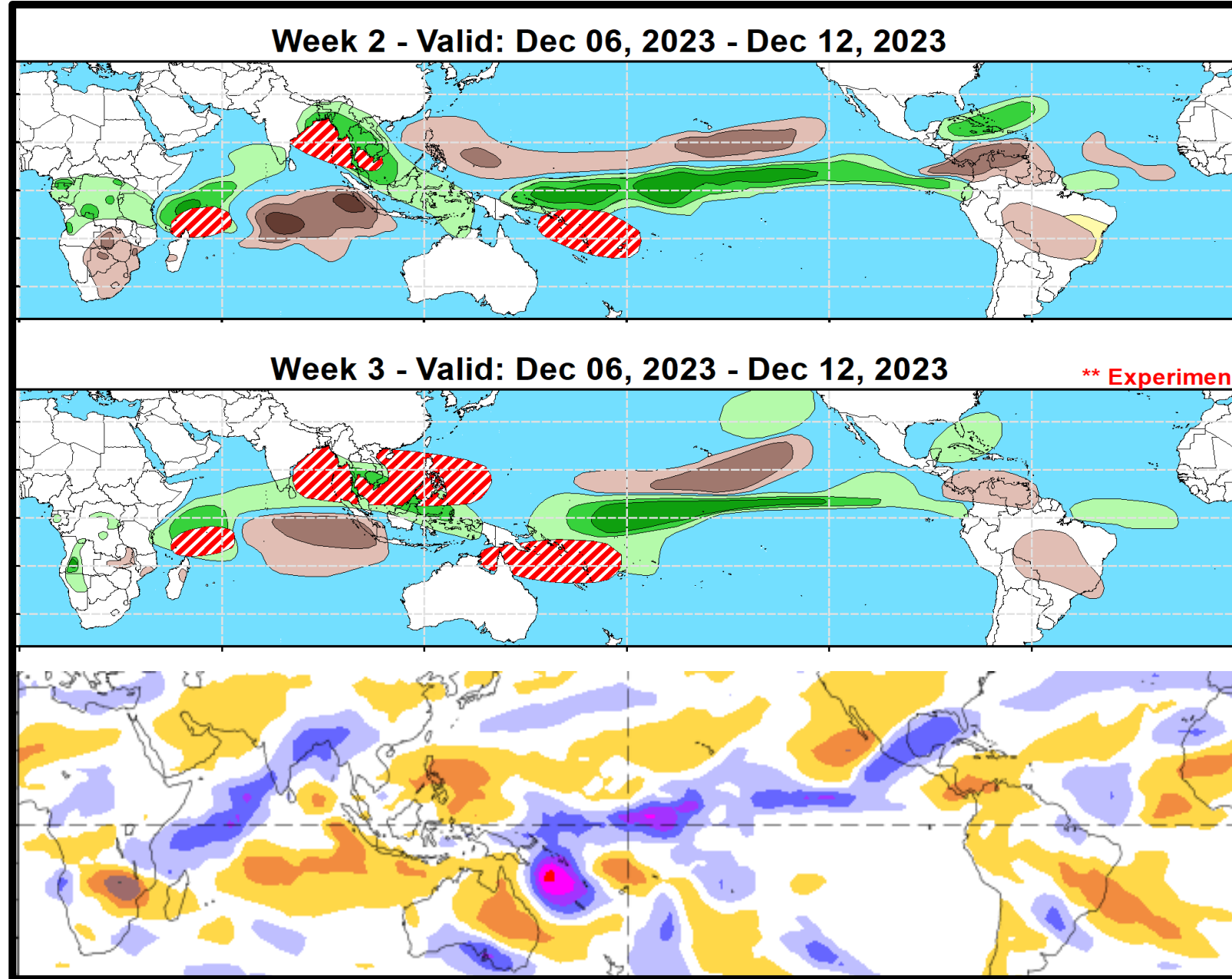
12/12/2023

Nick Novella

NWS / NCEP / Climate Prediction Center

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

- No TCs formed during the past week.
- TC Jasper formed in SPAC (12/5) and is remains active.



Synopsis of Climate Modes:

ENSO: (Nov 9, 2023 Update) *next update on Thursday, Dec 14th*

- ENSO Alert System Status: [El Niño Advisory](#)
- El Niño is anticipated to continue through the Northern Hemisphere spring (w/ a 62% chance during Apr-Jun, 2024).

MJO and other subseasonal tropical variability:

- The MJO remains active, with the enhanced phase propagating eastward from the Indian Ocean and Maritime Continent since late November, and has recently entered the Western Pacific.
- RMM forecasts have trended towards a more incoherent MJO as it crosses the western Pacific during the next week or so. This predicted disorganization looks to be tied to short-lived, competing tropical variability before more coherent MJO activity resumes over the Western Hemisphere later in the outlook period.
- Tropical cyclogenesis is favored over the southern Indian Ocean within increasingly more favorable conditions for development over the South Pacific.
- The extratropical response associated with eastward propagating Western Pacific and Western Hemisphere MJO events typically entails the development of mid-level troughing and colder than normal temperatures over the CONUS, but this realization is at odds with extended range forecast guidance.

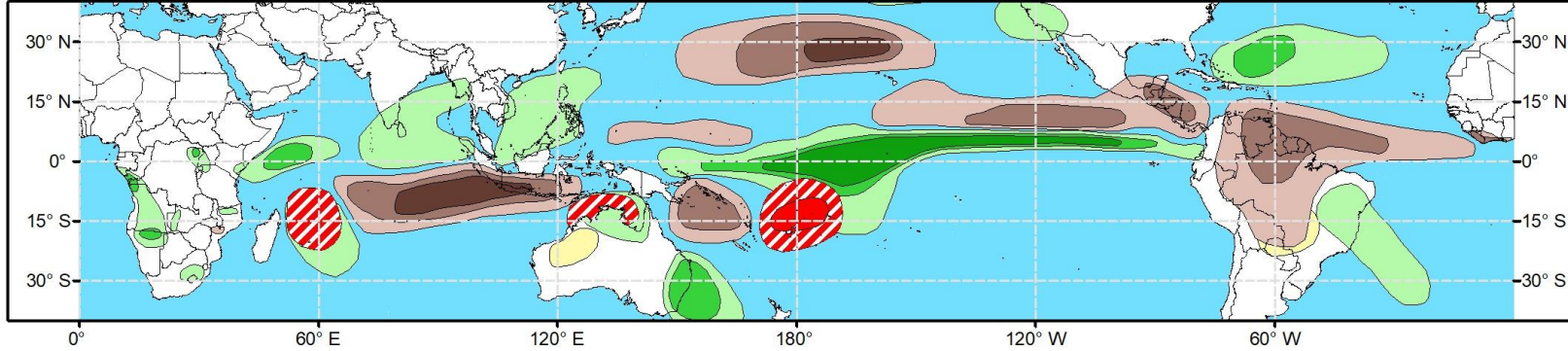
GTH Outlook:



Global Tropics Hazards Outlook Climate Prediction Center

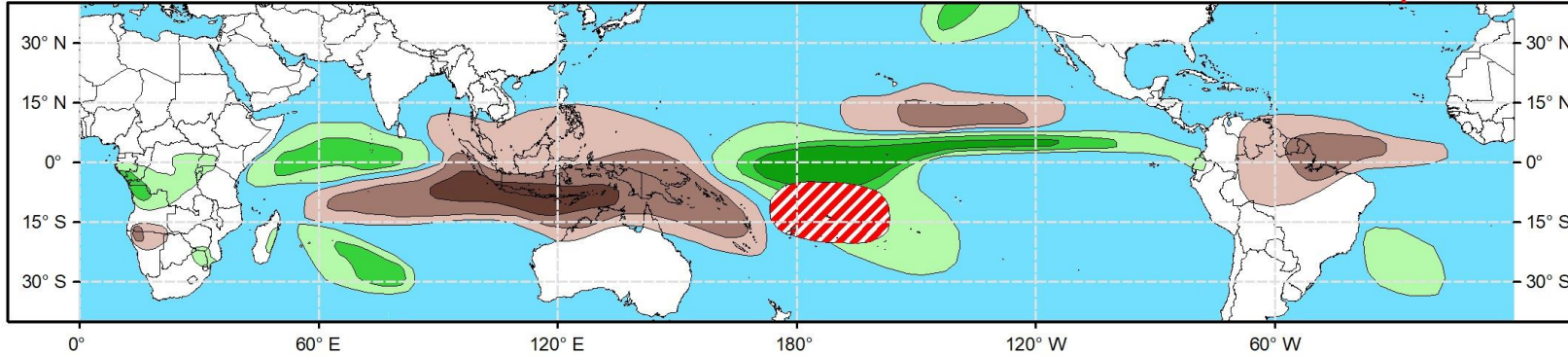


Week 2 - Valid: Dec 20, 2023 - Dec 26, 2023



Week 3 - Valid: Dec 27, 2023 - Jan 02, 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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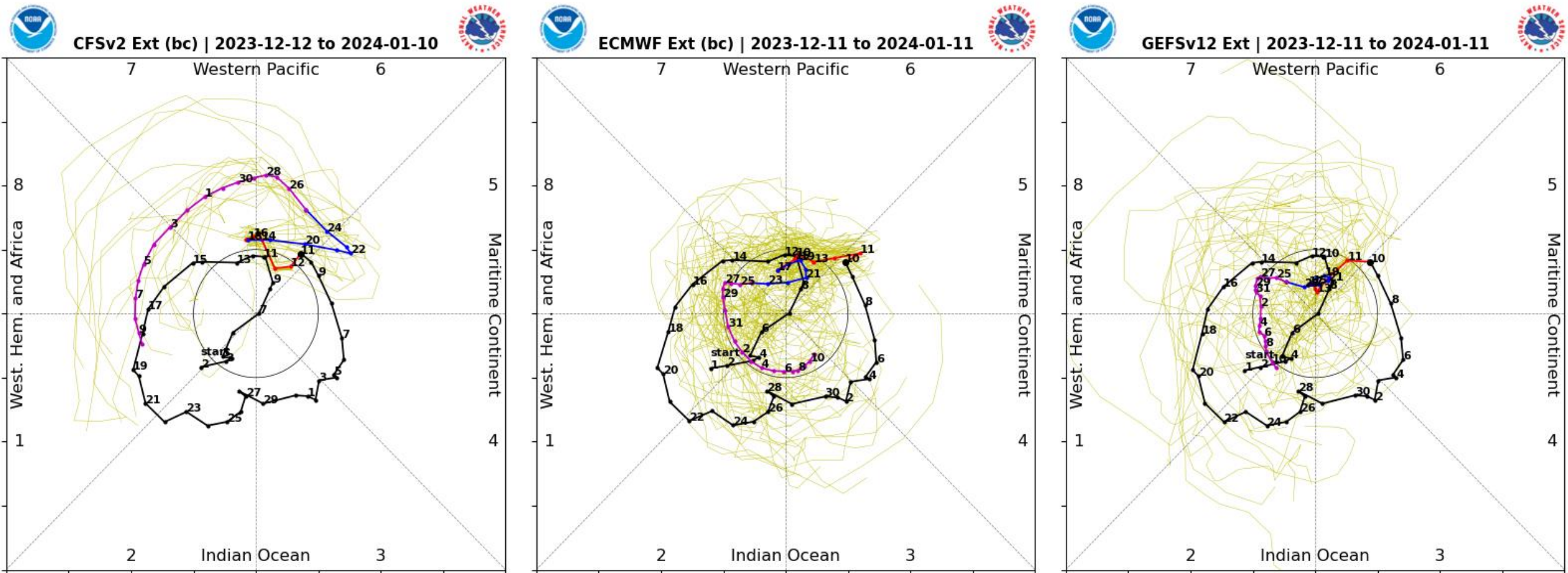
*7-day min temperatures in the
Lower third of the historical range*

Issued: 12/12/2023

Forecaster: Novella

This product is updated once per week and targets broad scale conditions integrated over a 7-day period for US interests only. Consult your local responsible forecast agency.

RMM Index Observations & Forecasts:

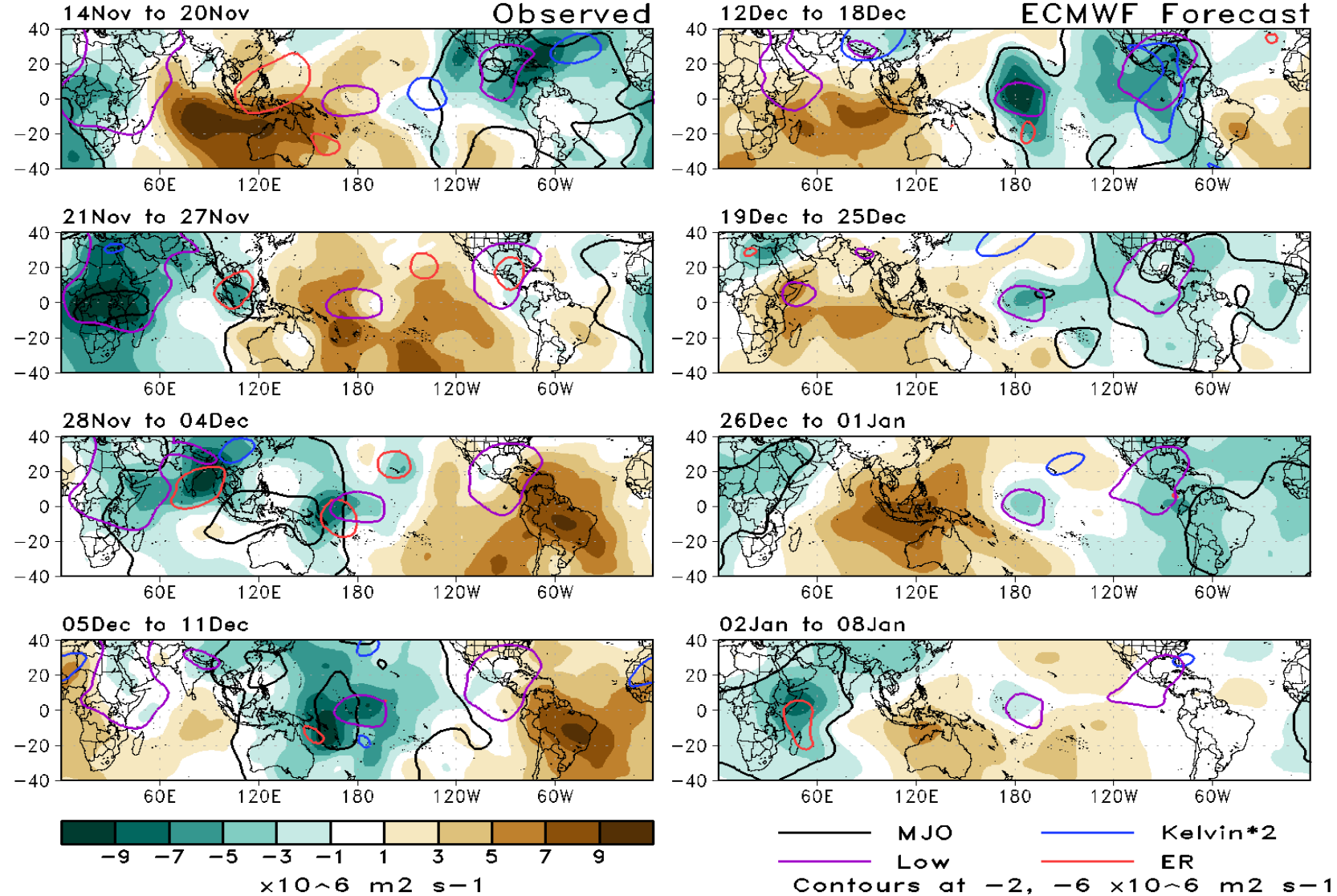


- A slowed and decreased signal is generally favored in the RMM forecasts over the Western Pacific.
- Beyond this time, a more coherent signal reemerges over the Western Hemisphere by week-3, with the MJO possibly returning to the Indian Ocean by early 2024.

200-hPa Velocity Potential Anomaly Maps:

Green: Enhanced Divergence Aloft Brown: Enhanced Convergence Aloft

CHI200 7-Day Means



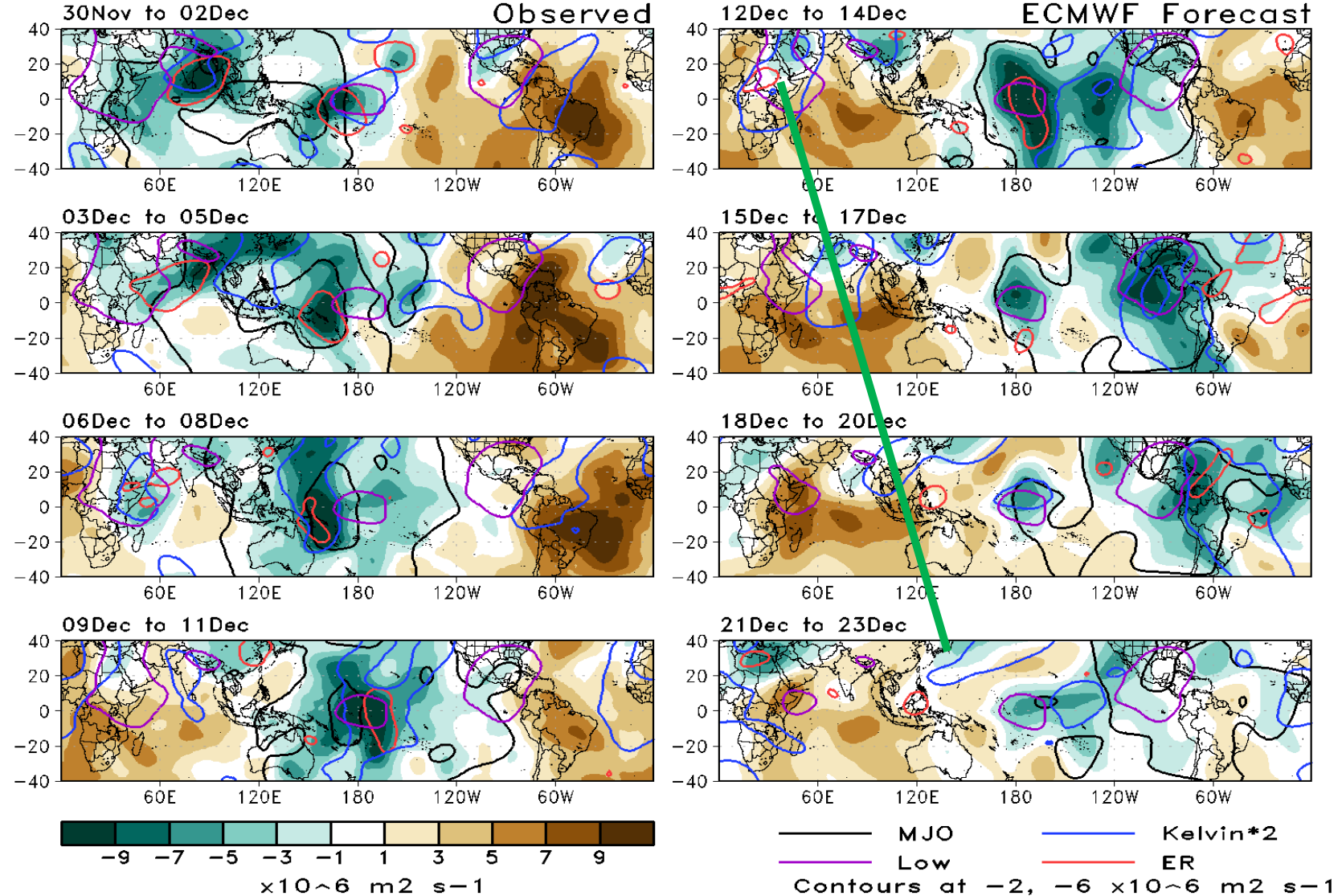
- Constructive interference between the MJO and the El Nino base state is evident in the observations over the equatorial Pacific, with the suppressed MJO envelope extending from the Americas to the western IO.

- An eastward propagating wave-1 pattern is generally maintained in the mean forecasts, but the suppressed envelope of the MJO is impeded by Kelvin Wave activity during the next week of so.

200-hPa Velocity Potential Anomaly Maps:

Green: Enhanced Divergence Aloft Brown: Enhanced Convergence Aloft

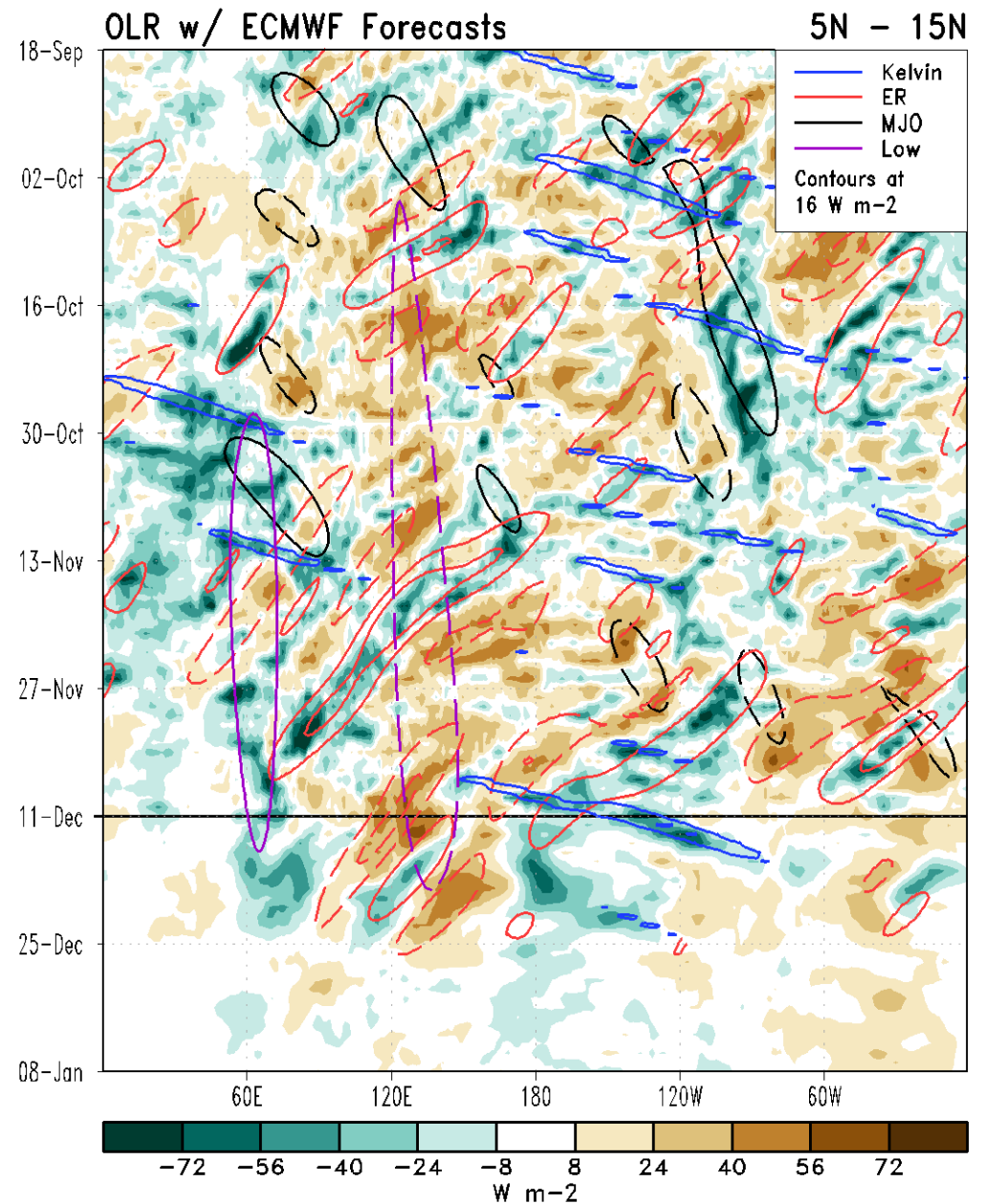
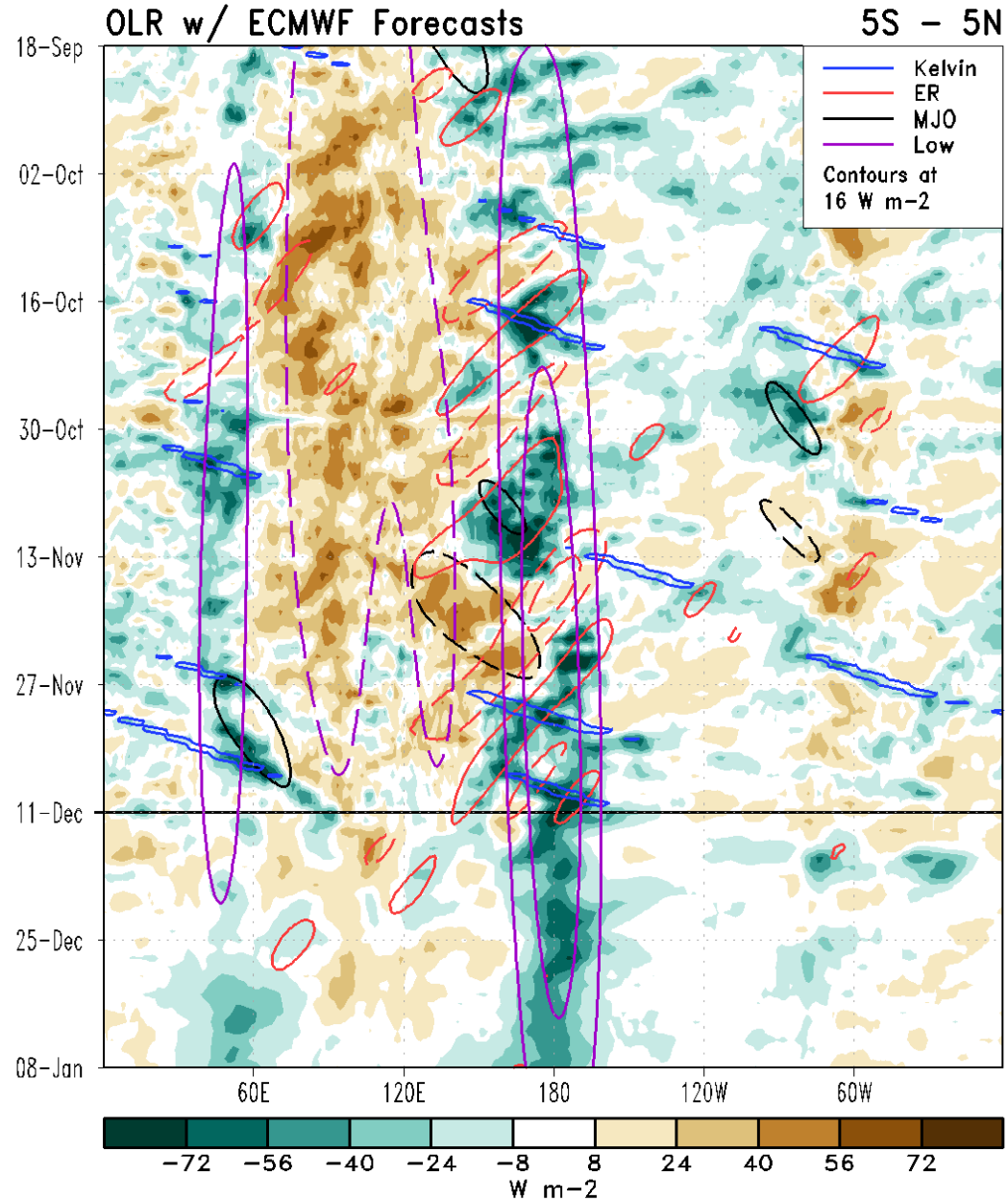
CHI200 3-Day Means



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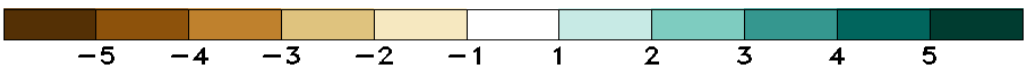
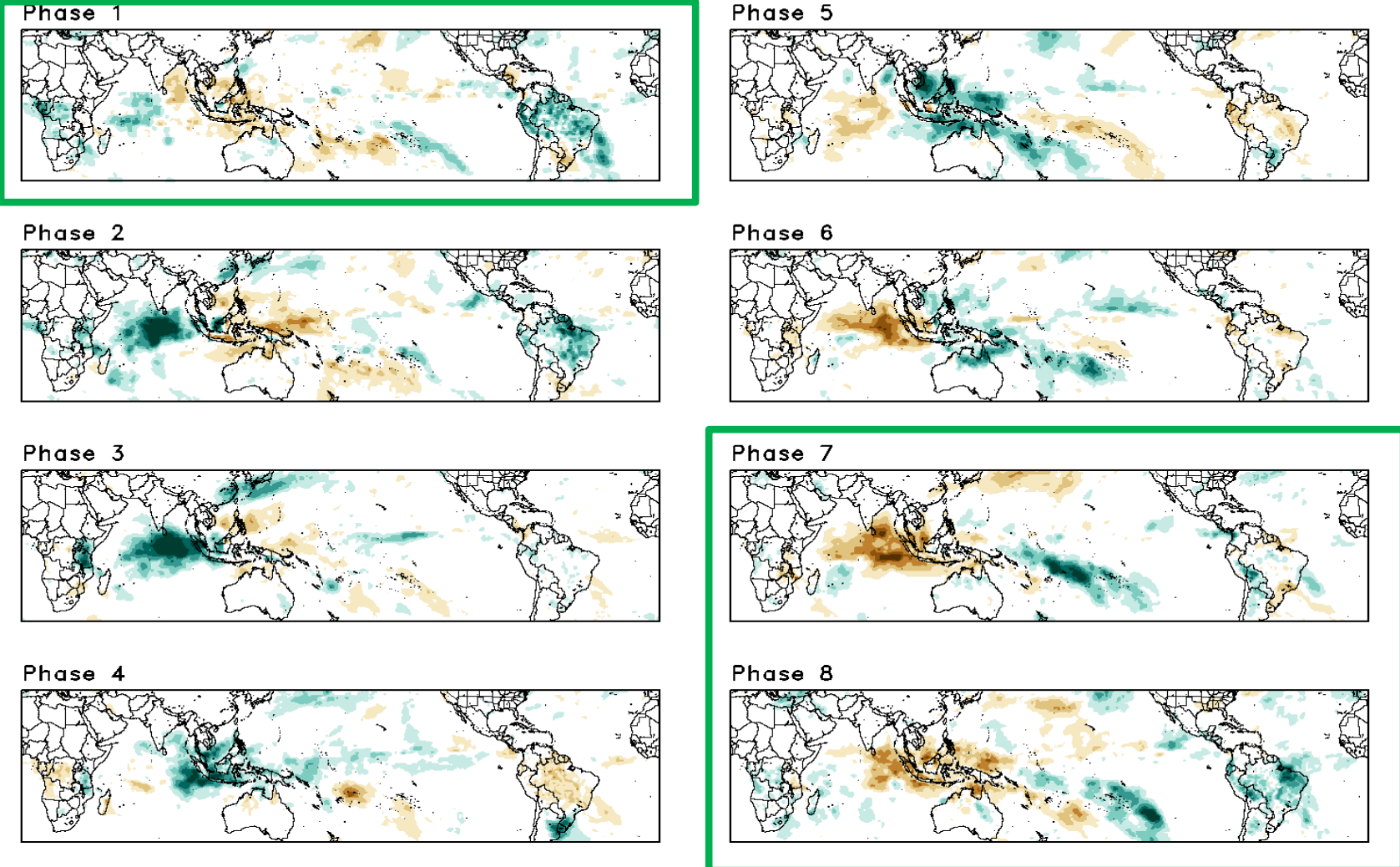
- An eastward propagating wave-1 pattern is generally maintained in the mean forecasts, but the suppressed envelope of the MJO is impeded by Kelvin Wave activity during the next week of so.

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



Historical Precipitation Anomalies By MJO Phase:

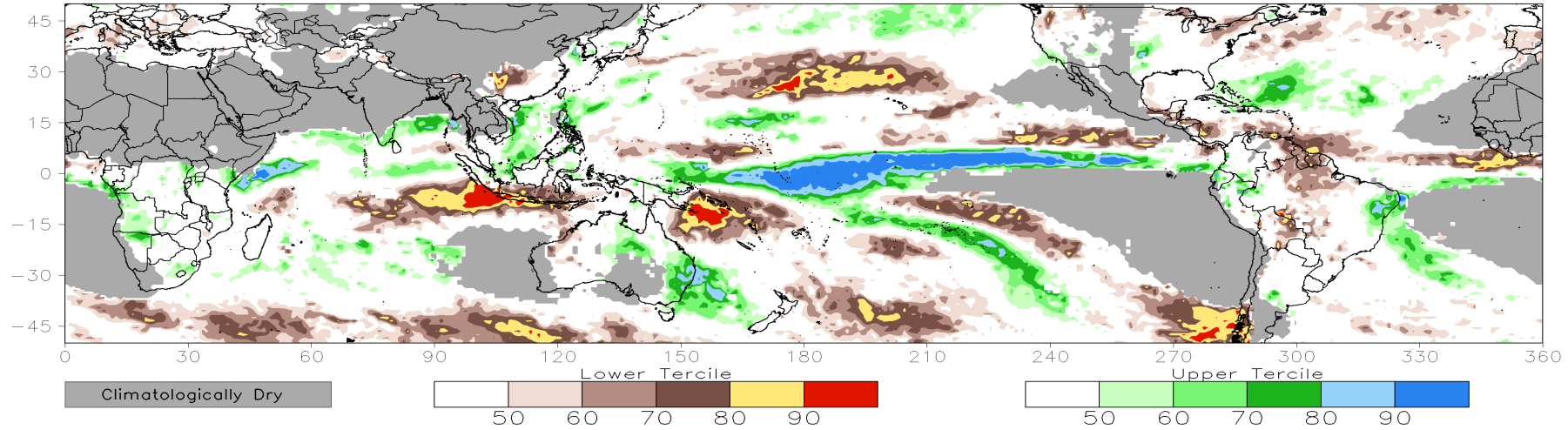
NDJ MJO Composite: GPCP1DD (mm/day)



Consolidated Probabilistic Precipitation: Weeks 2 & 3

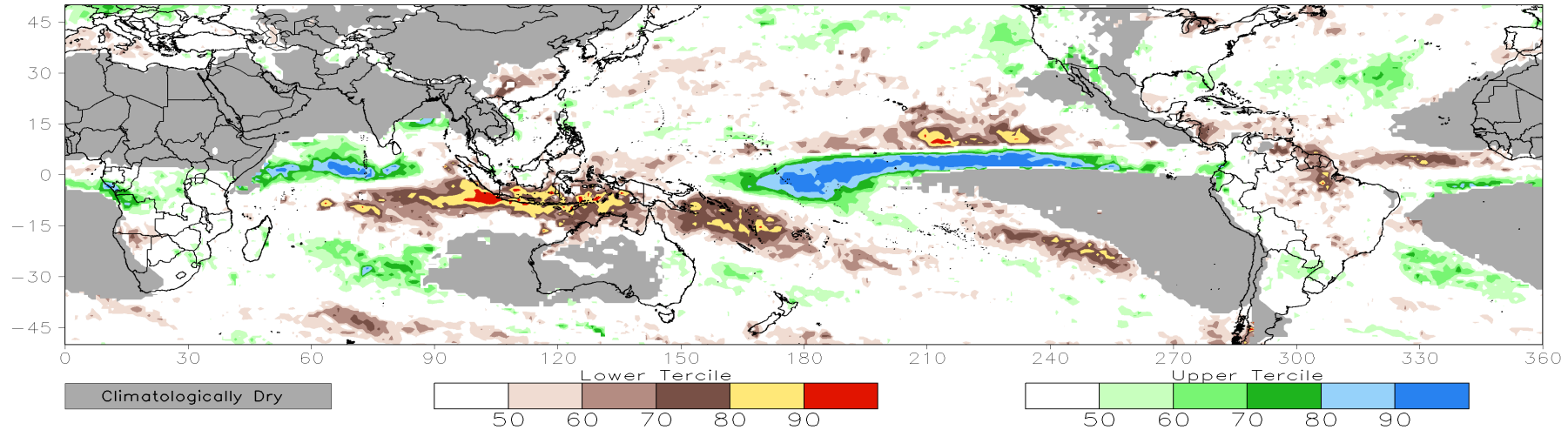
CONS 00z: Week2 Probability for Total Rainfall Below(Above) Lower(Upper) Tercile (%)

Valid: 20Dec2023–26Dec2023



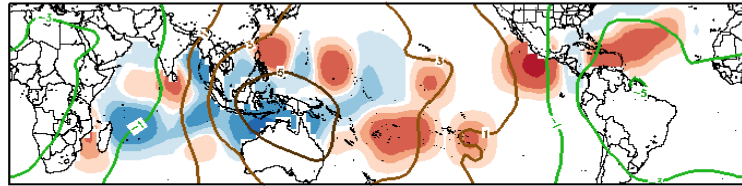
CONS 00z: Week3 Probability for Total Rainfall Below(Above) Lower(Upper) Tercile (%)

Valid: 27Dec2023–02Jan2024

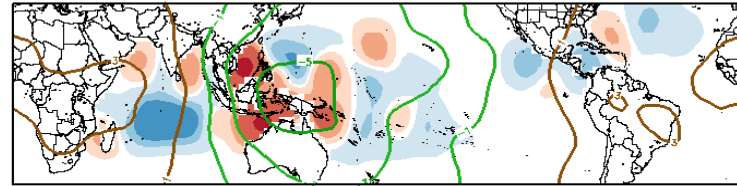


Historical TC Origin Anomalies By MJO Phase & Weeks 2+3 Genesis Climo:

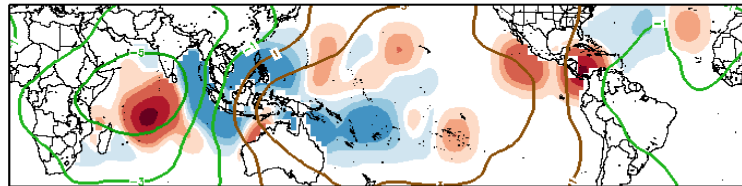
NDJ MJO Composite: Mean TC Origin Density Anomaly ($\#TCs/277km^2*100$)
 w/ NDJ CHI200 ($\times 10^6 m^2 s^{-1}$) / Contours every $2 \times 10^6 m^2 s^{-1}$



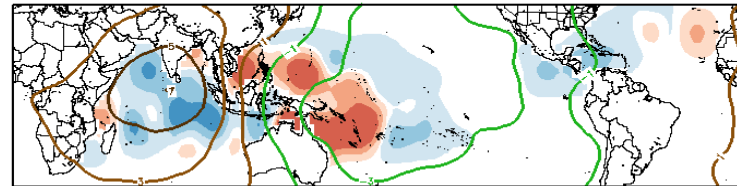
Phase 1



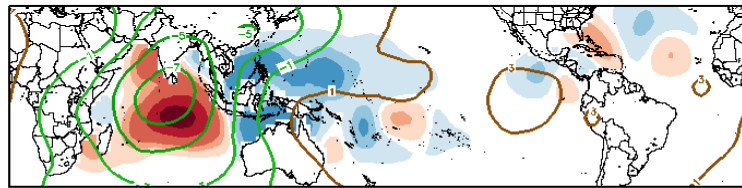
Phase 5



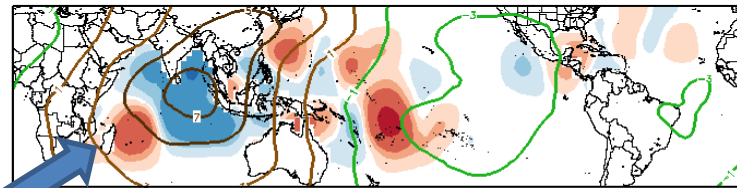
Phase 2



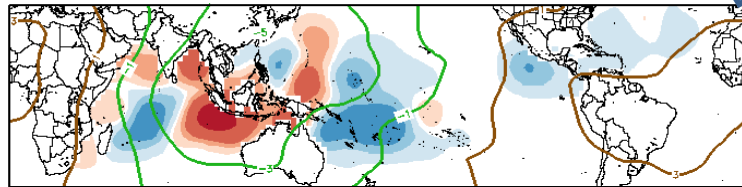
Phase 6



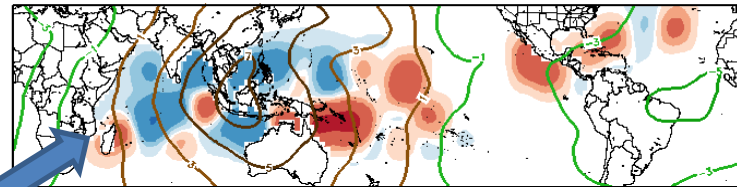
Phase 3



Phase 7



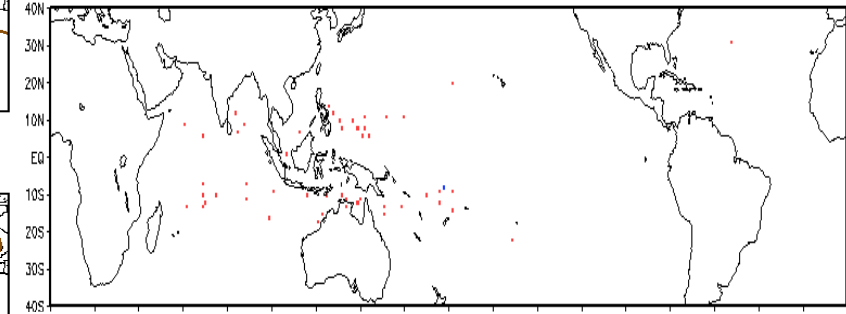
Phase 4



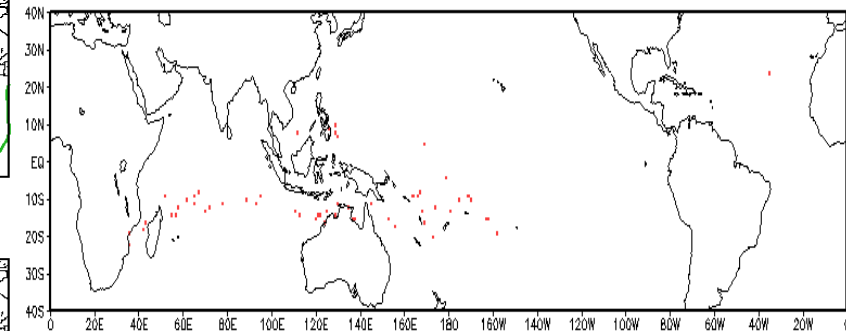
Phase 8



Observed TC Genesis, 1979–2021
 7-day Period 1220 to 1226



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

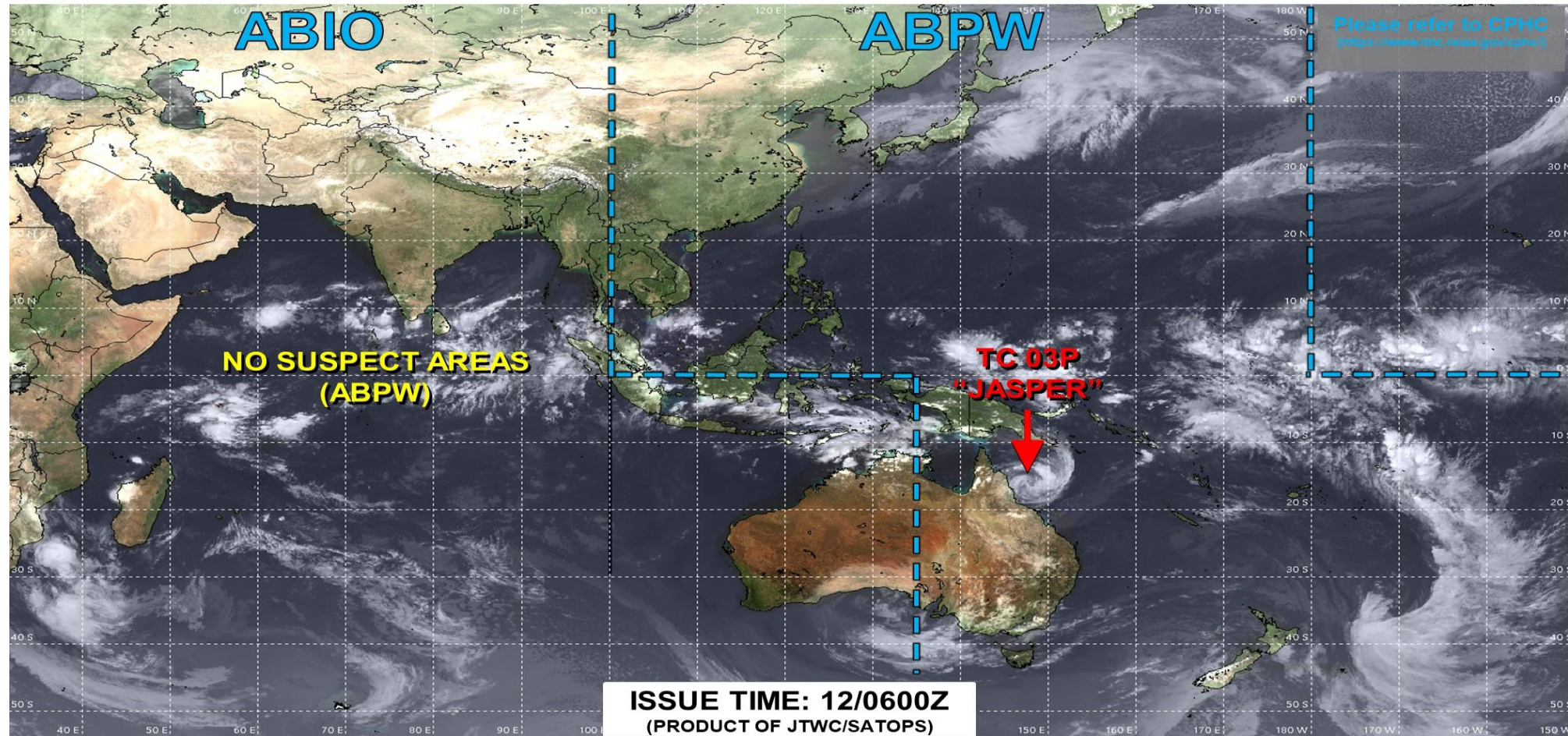


Experimental

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

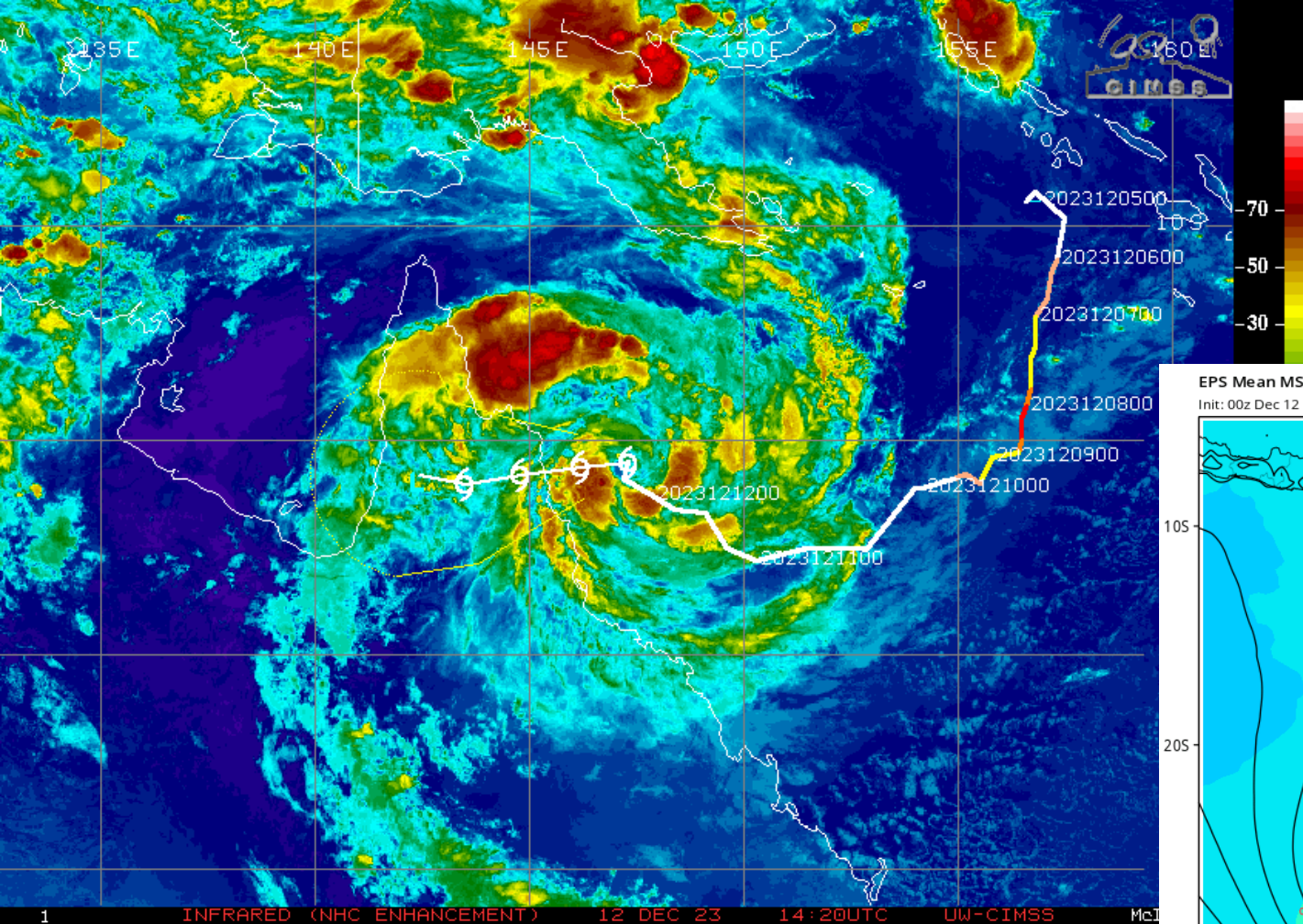


TC development likely within 24 hours (Reference TCFA)



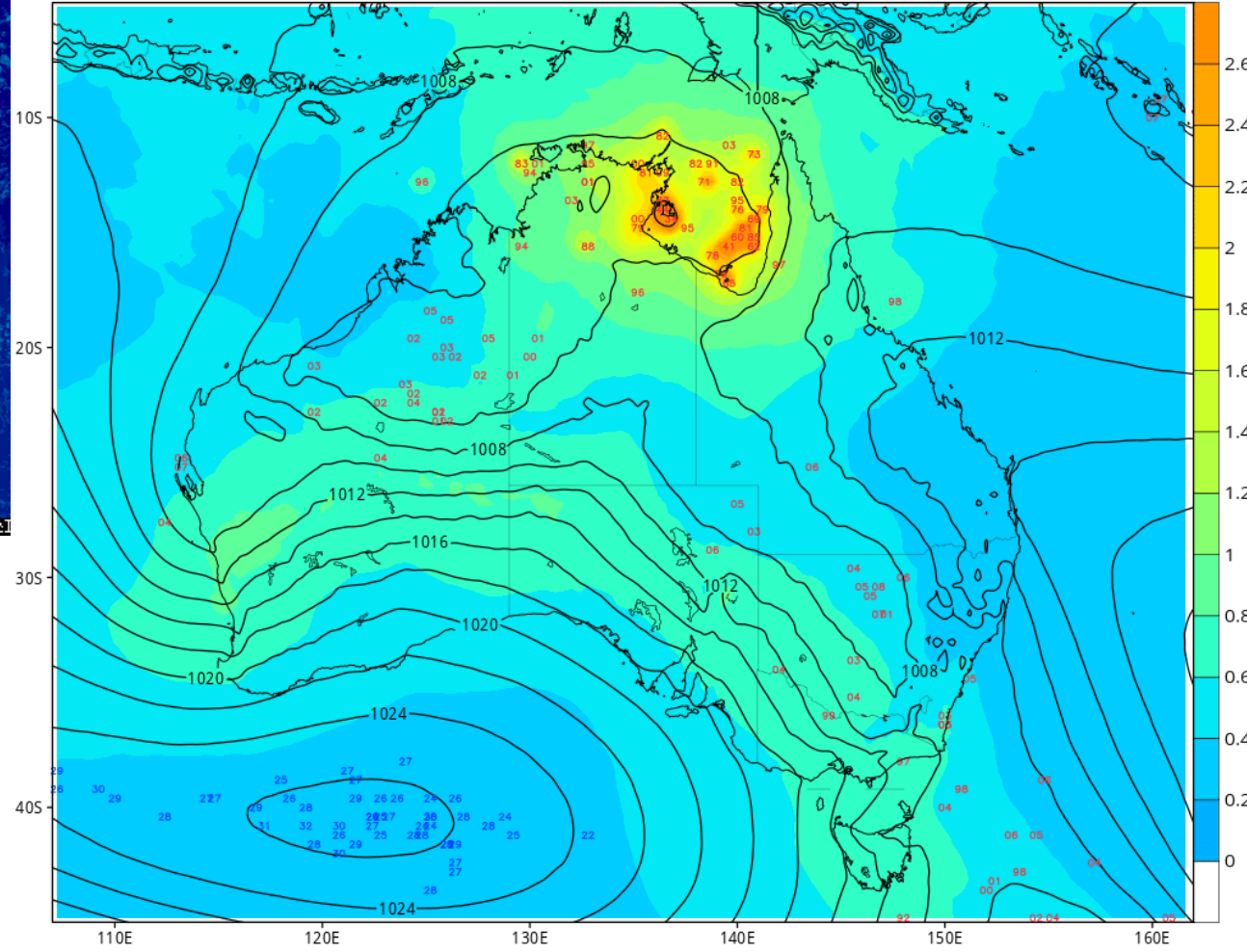
Monitoring for potential transition to TC. Invest label color denotes tropical transition probability

 Tropical Cyclone (Reference Warning)



1 INFRARED (NHC ENHANCEMENT) 12 DEC 23 14:20UTC UW-CIMSS MET

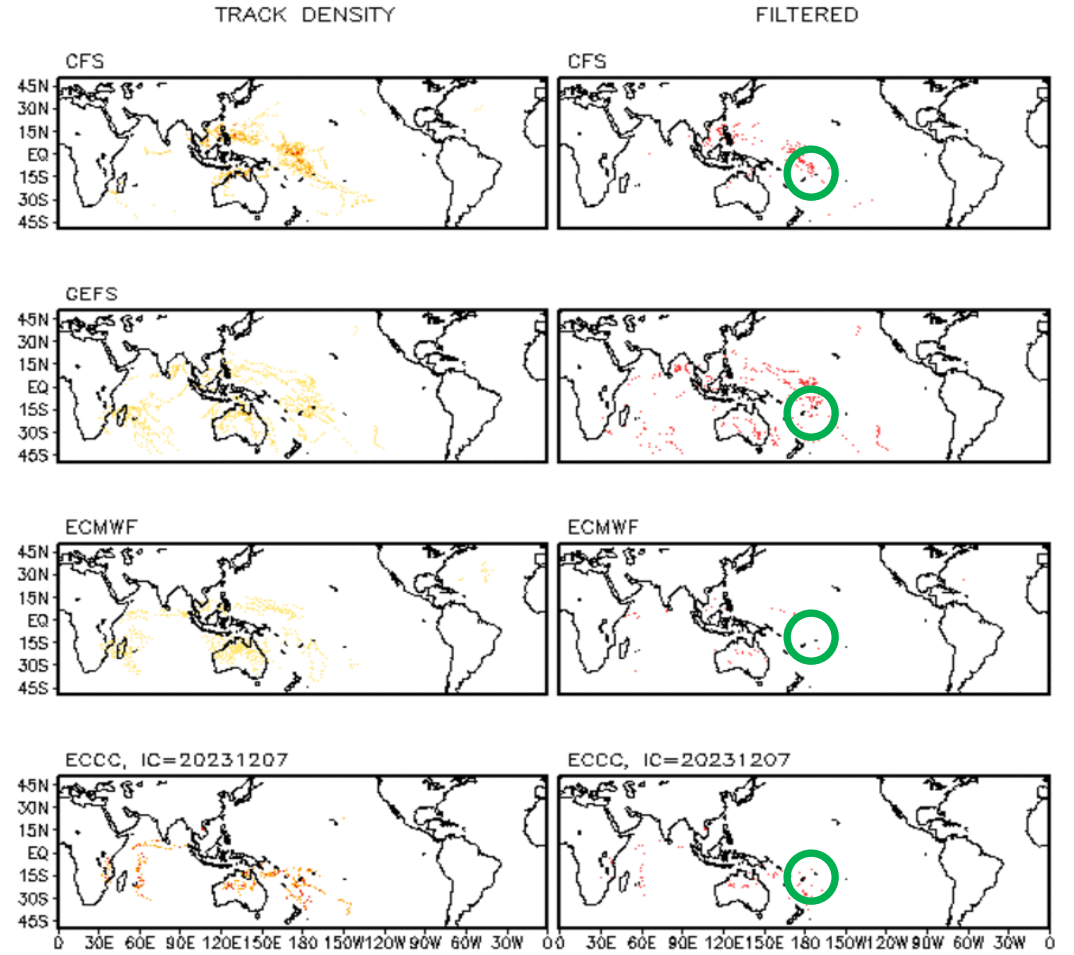
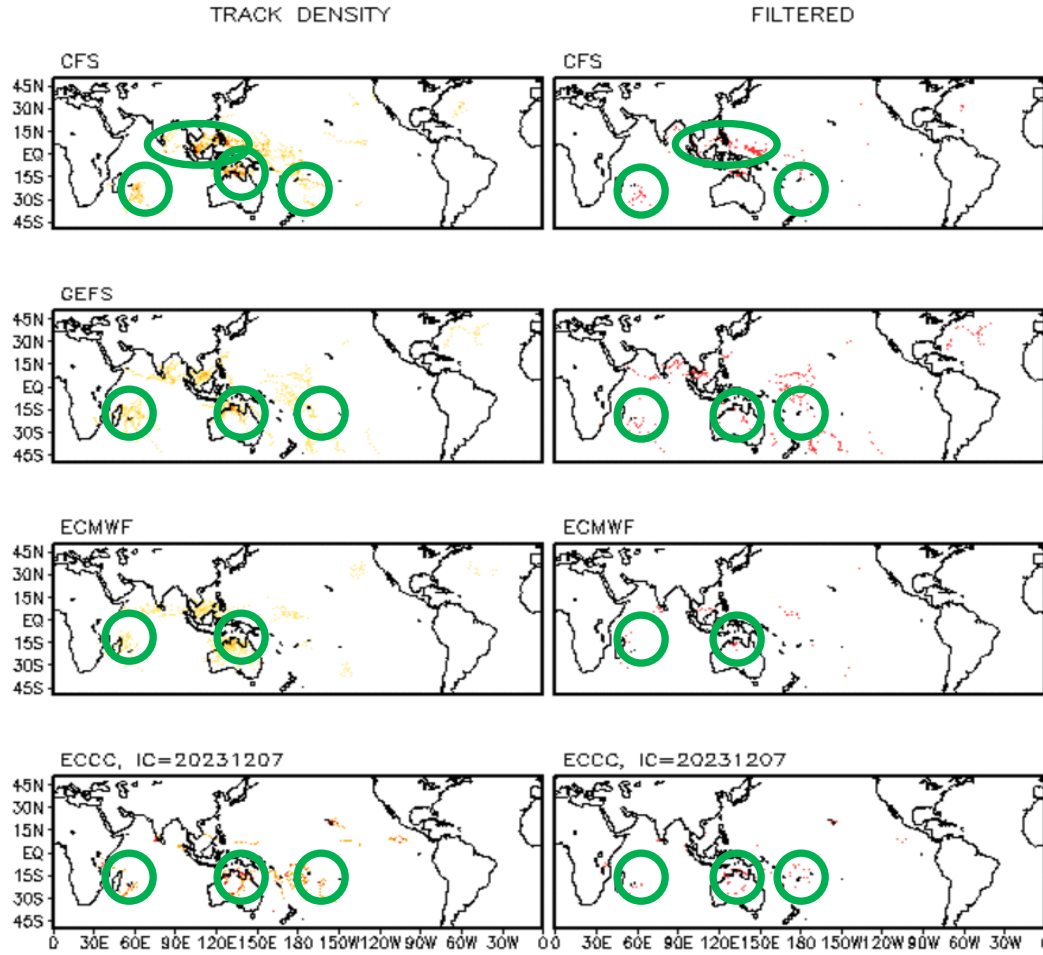
EPS Mean MSLP (mb), Ensemble Member Pressure Centers (Lows: red | High: blue), & Normalized Spread (σ)
 Init: 00z Dec 12 2023 Forecast Hour: [168] valid at 00z Tue, Dec 19 2023 TROPICALTIDBITS.COM



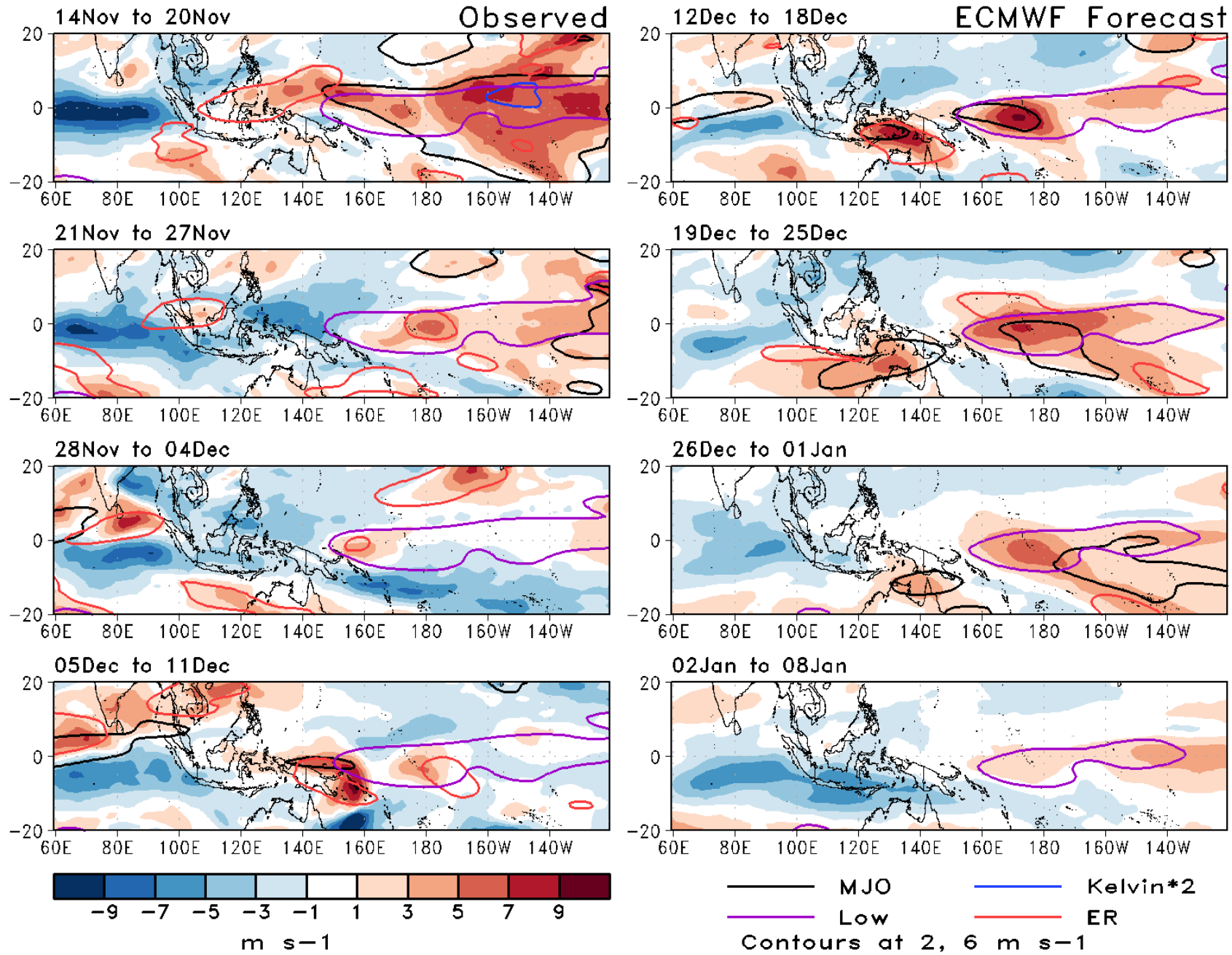
Multi-Model TC Track Densities: Weeks 2+3

Storm Track Density Distribution, IC=20231211
Week 2 Forecast: 1220-1226

Storm Track Density Distribution, IC=20231211
Week 3 Forecast: 1227-0102

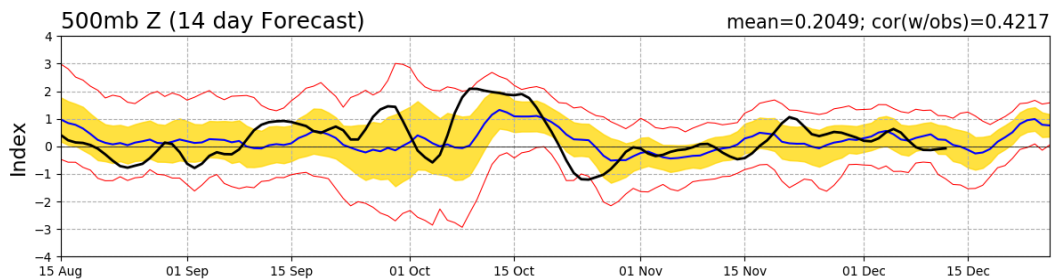
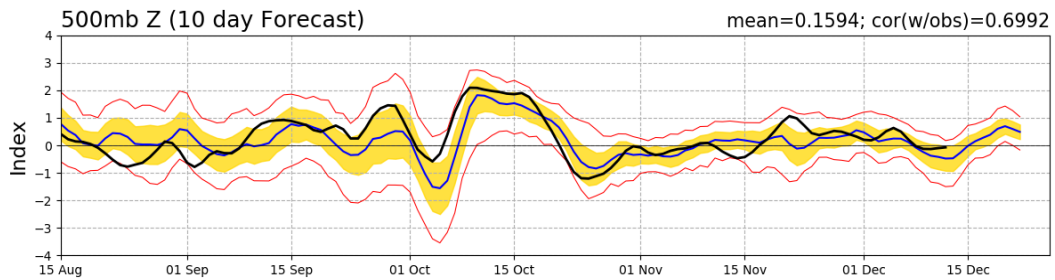
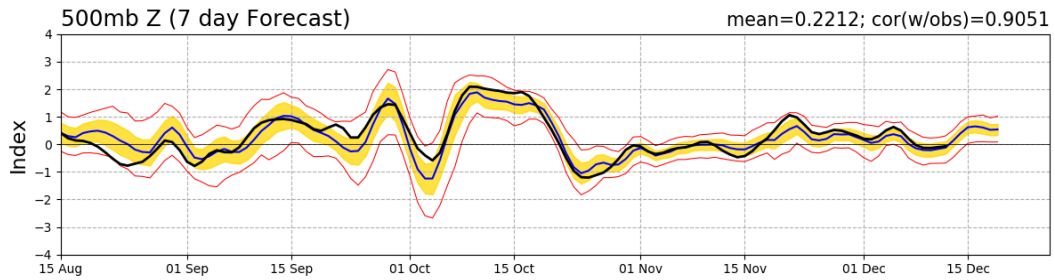
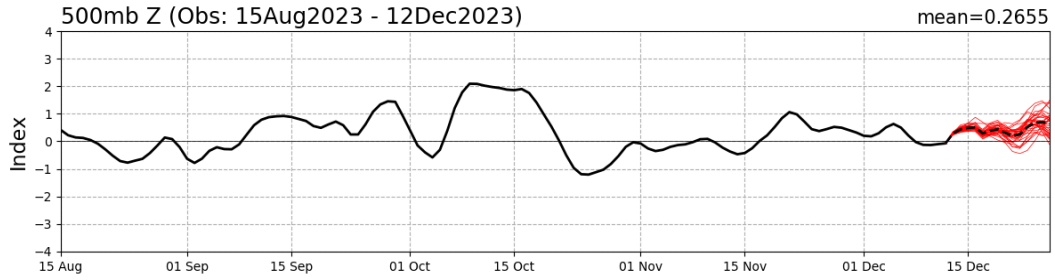


UWND850 7-Day Means

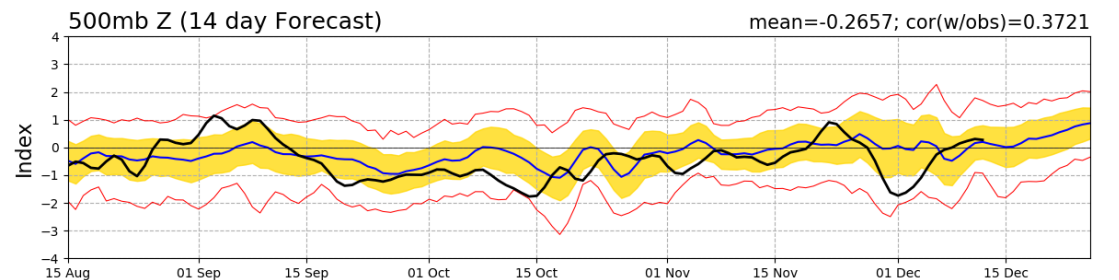
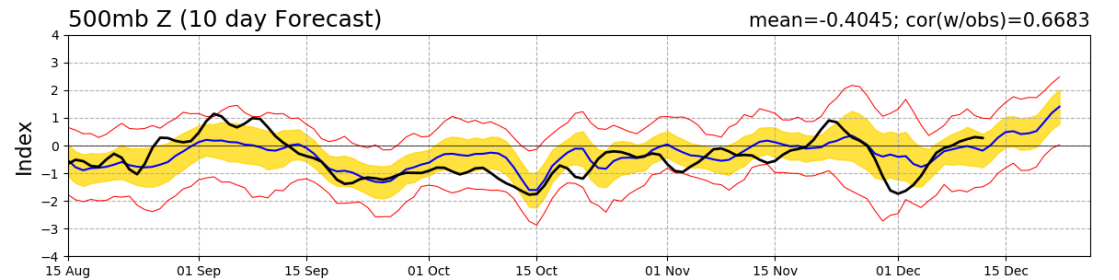
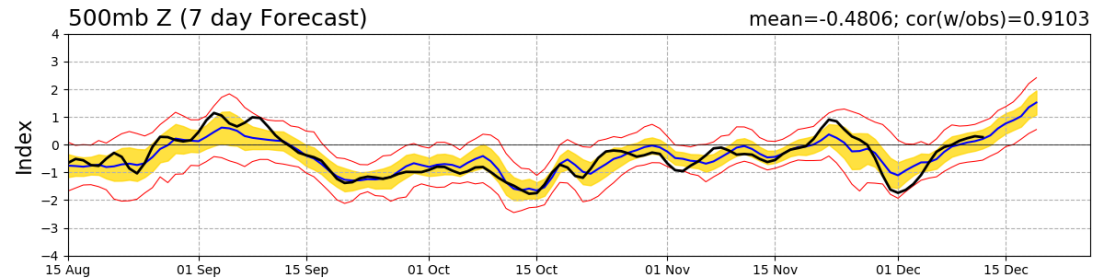
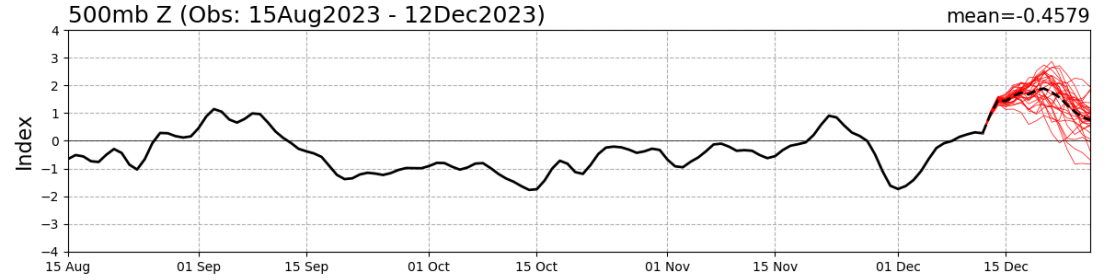


Teleconnection Indices: PNA / AO:

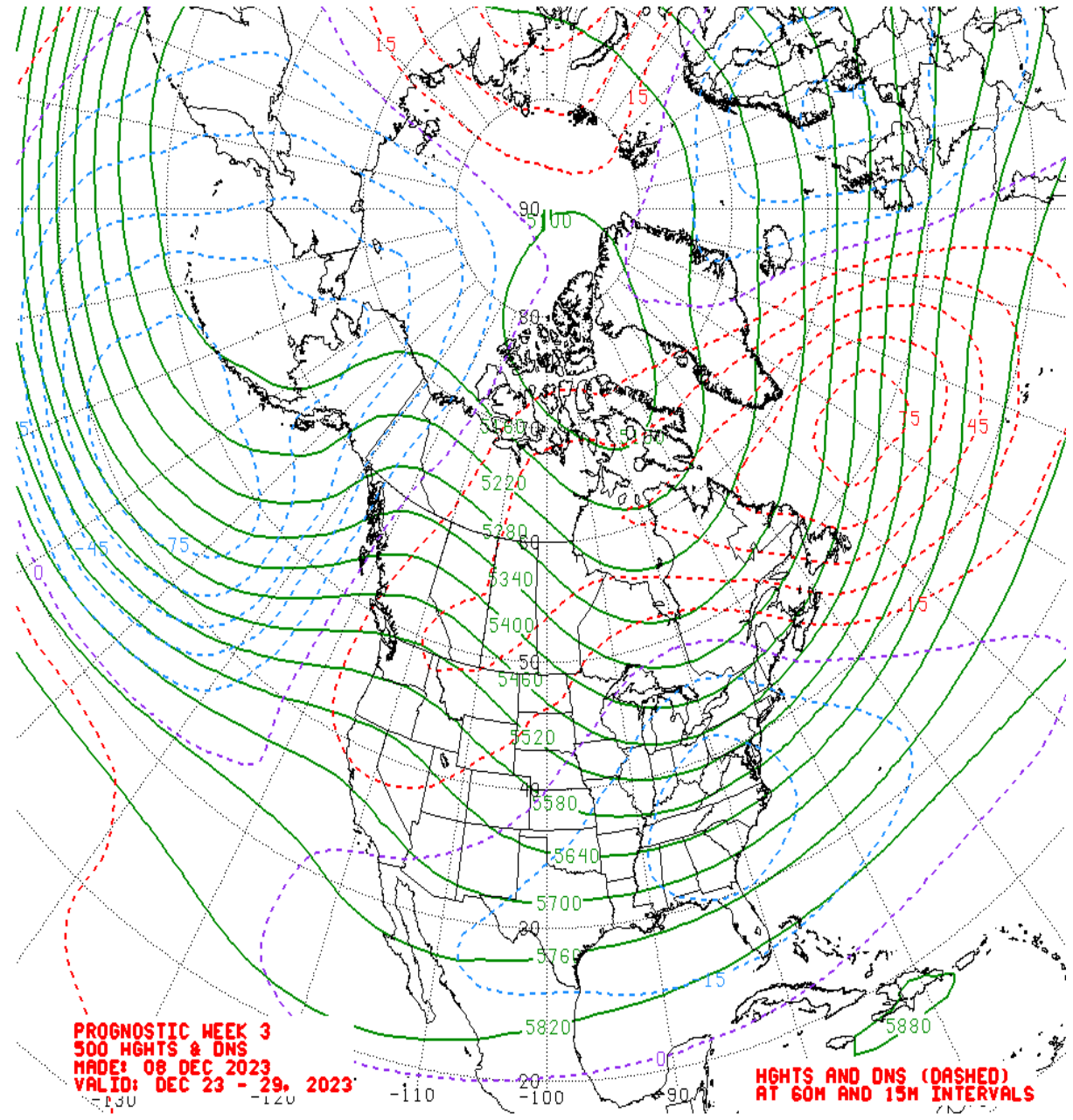
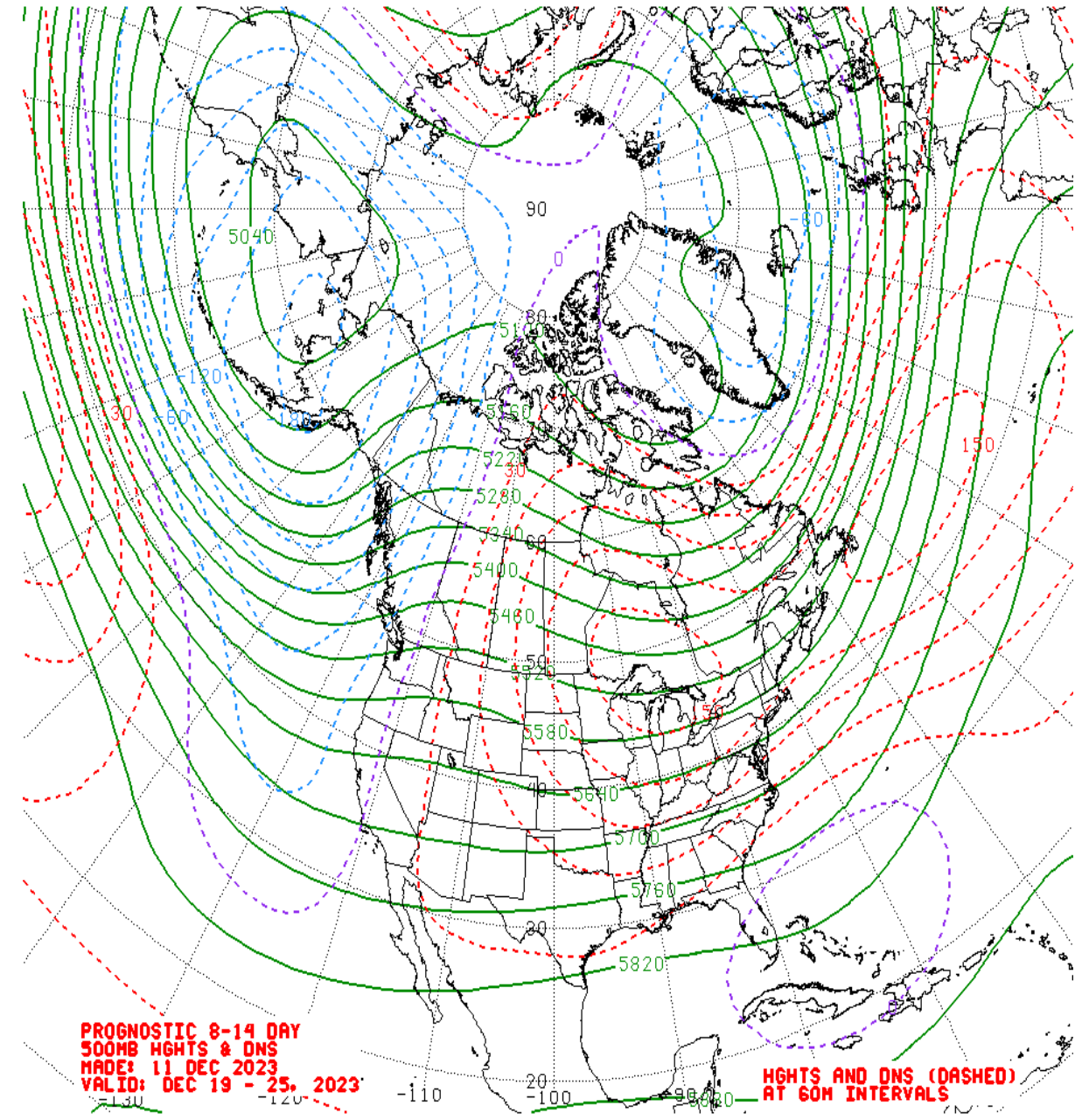
PNA Index: Observed & GEFS Forecasts



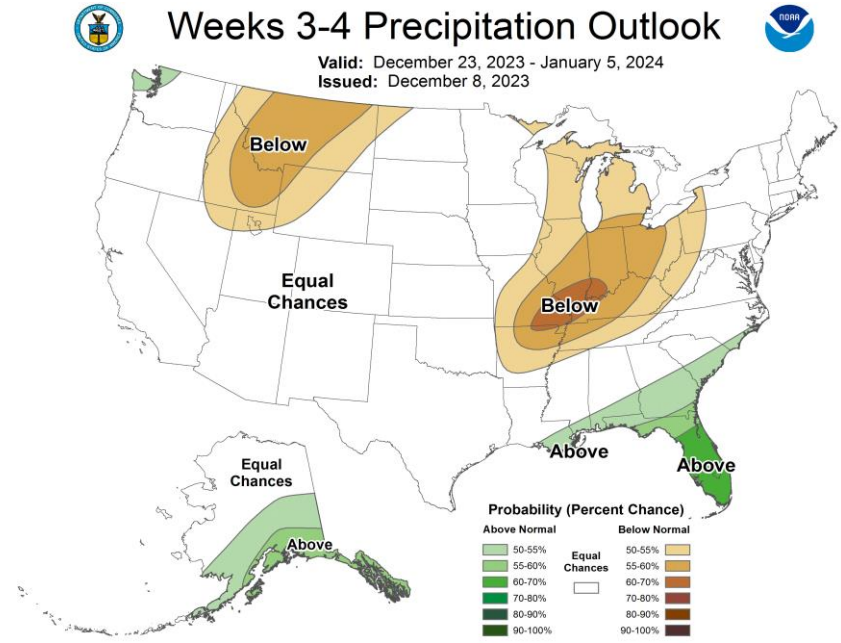
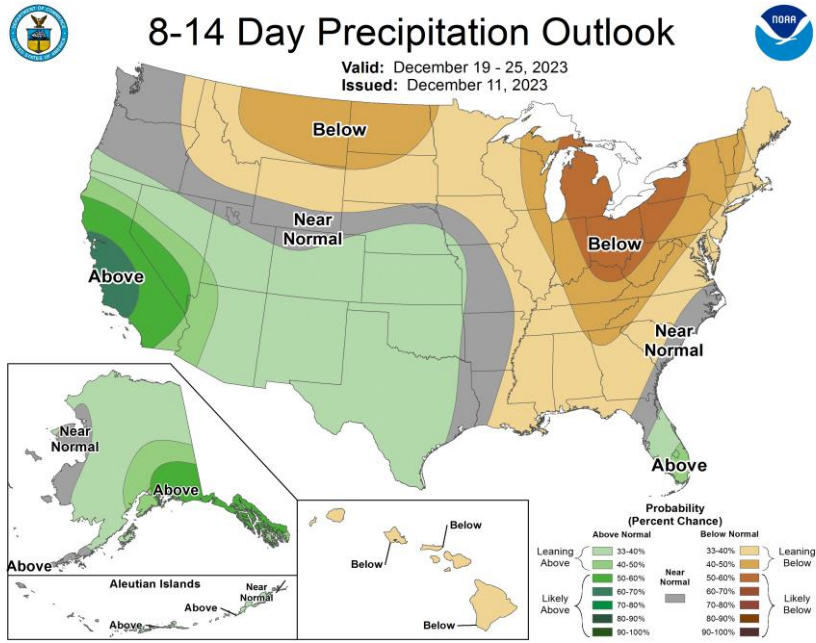
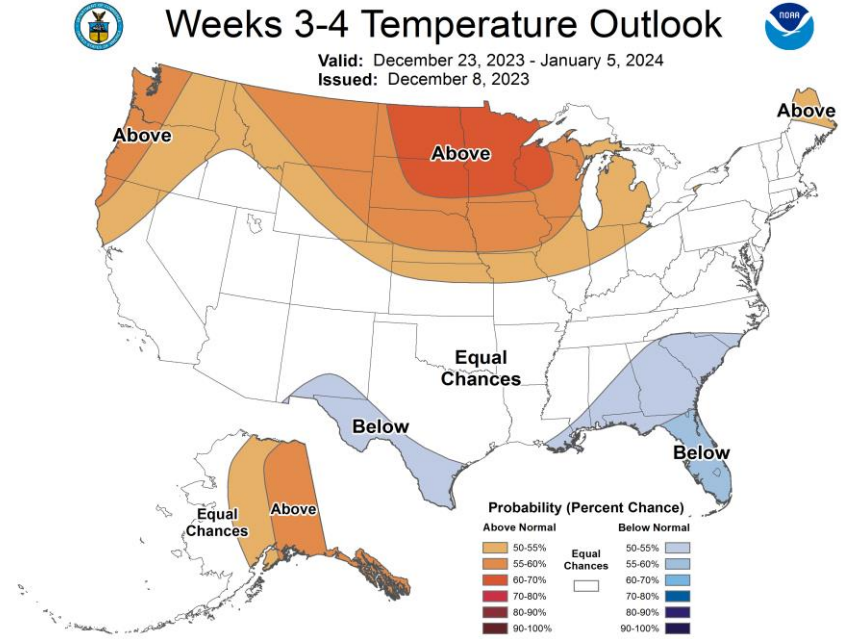
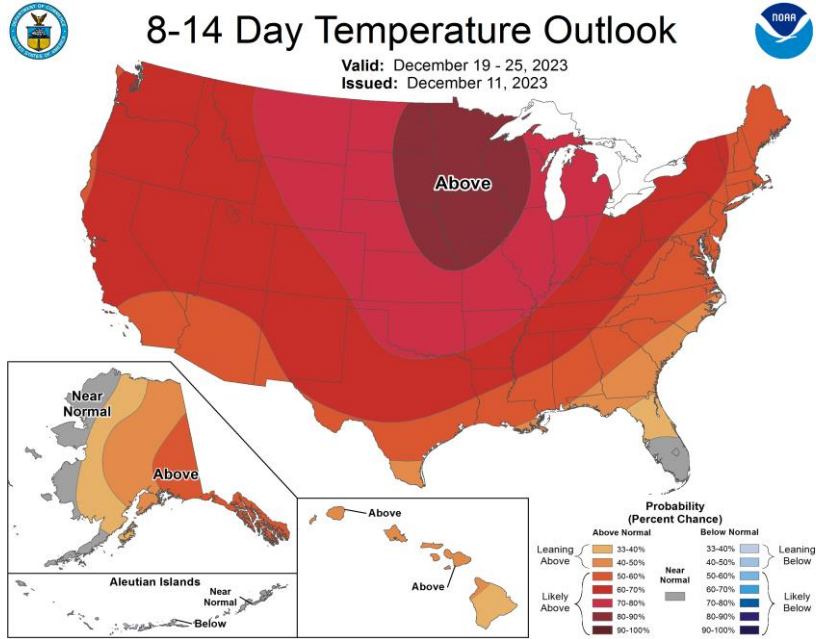
NAO Index: Observed & GEFS Forecasts



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



Official Temperature & Precipitation Forecasts:



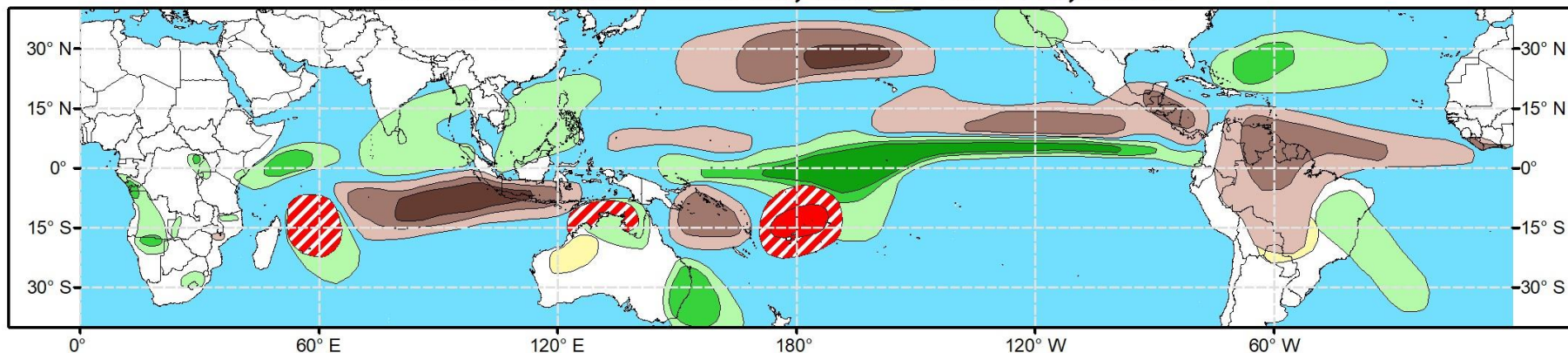


Global Tropics Hazards Outlook

Climate Prediction Center

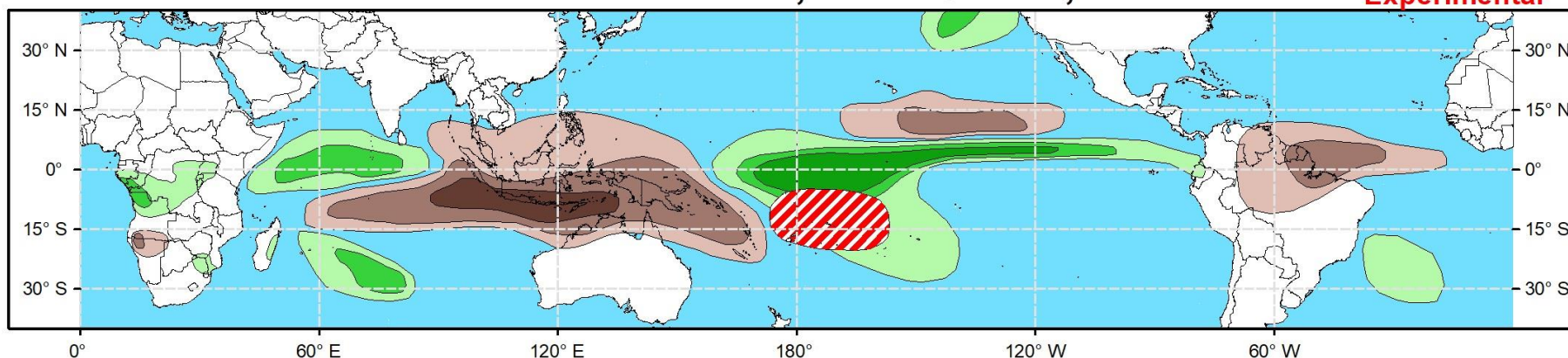


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