



Weeks 2-3 Global Tropics Hazards Outlook

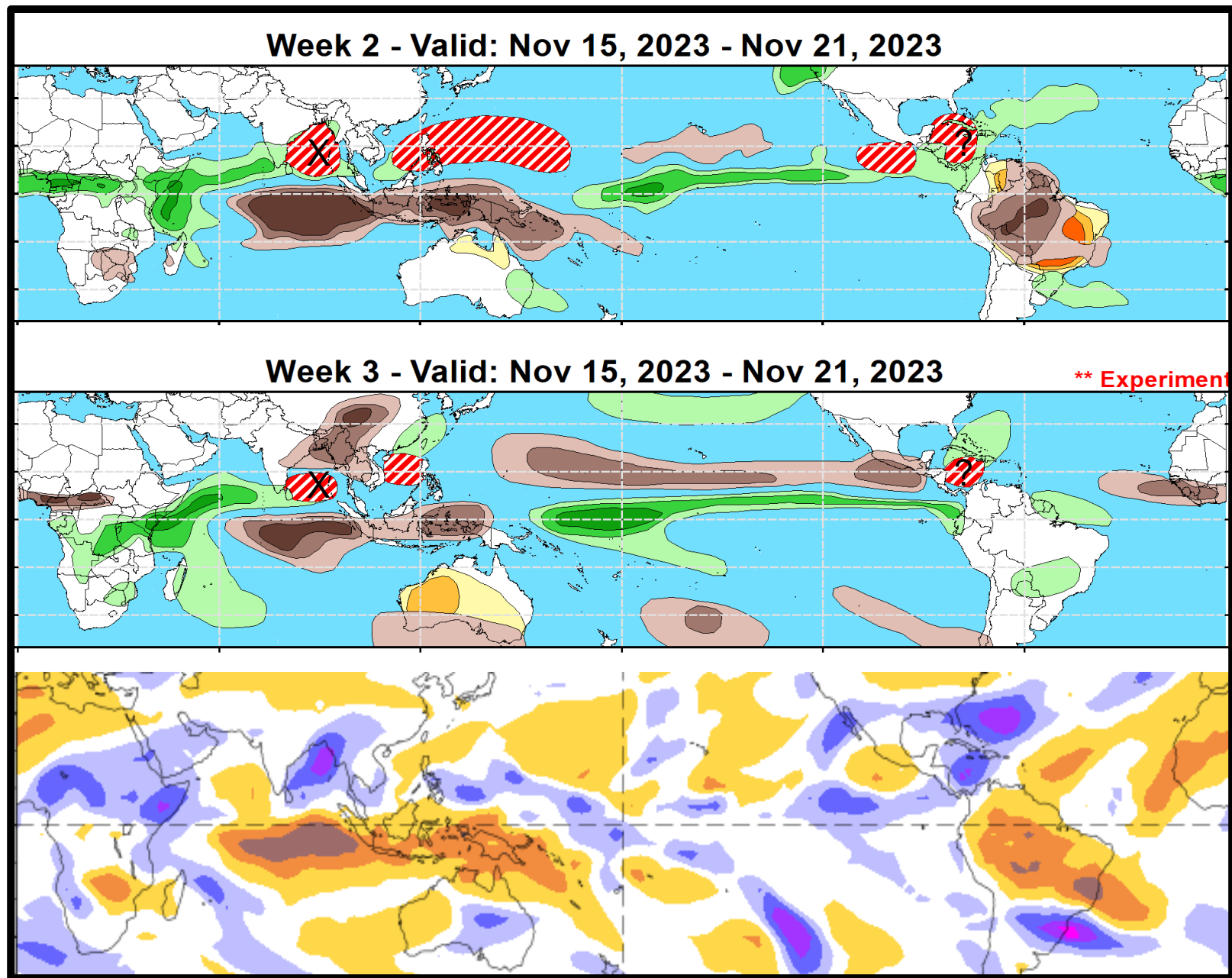
11/21/2023

Nick Novella

NWS / NCEP / Climate Prediction Center

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

- (x) Midhili (NIO): 11/16
- (?) PTC22 (ATL): 11/16



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 expected to continue through the Northern Hemisphere spring (with a 62% chance during Apr-Jun 2024).

MJO and other subseasonal tropical variability:

- Following constructive interference with El Niño over the equatorial Pacific, renewed intraseasonal activity is evident as the MJO continues to propagate eastward over the western Hemisphere while gaining amplitude during the past week.
- Good agreement exists in the RMM forecasts favoring continued eastward propagation over the Indian Ocean and entering the Maritime Continent toward the end of November. Upper-level velocity potential anomaly forecasts reveal a more coherent MJO returning to the Western Pacific by the middle of December.
- Renewed MJO activity is expected to bring more favorable conditions for tropical cyclogenesis over the Indian Ocean through the end of November, with an increasing potential shifting eastward into the western Pacific and south of the equator later in the outlook period.
- The extratropical response associated with autumn Indian Ocean MJO events typically leads to the development of anomalous mid-level ridging and above-normal temperatures over parts of the central and eastern CONUS.

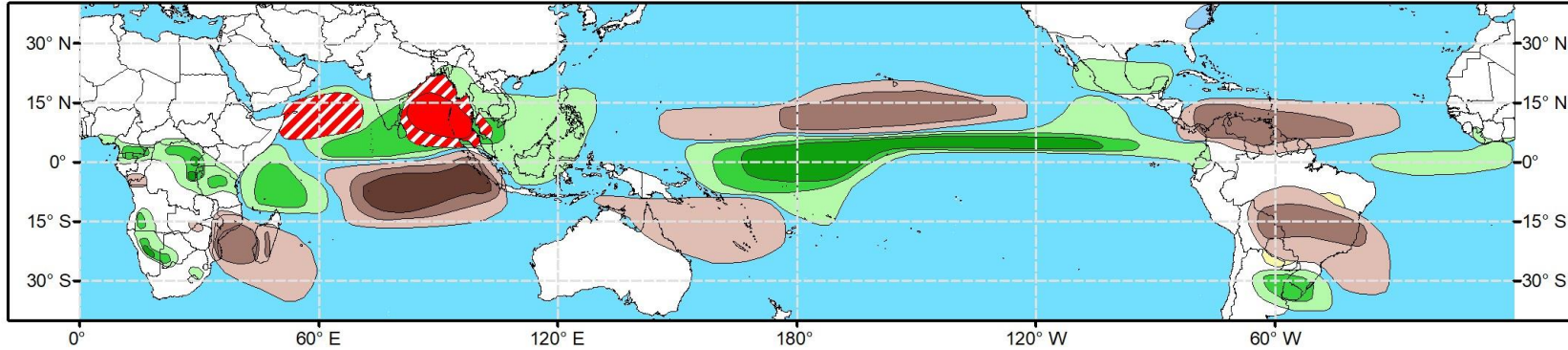
GTH Outlook:



Global Tropics Hazards Outlook Climate Prediction Center

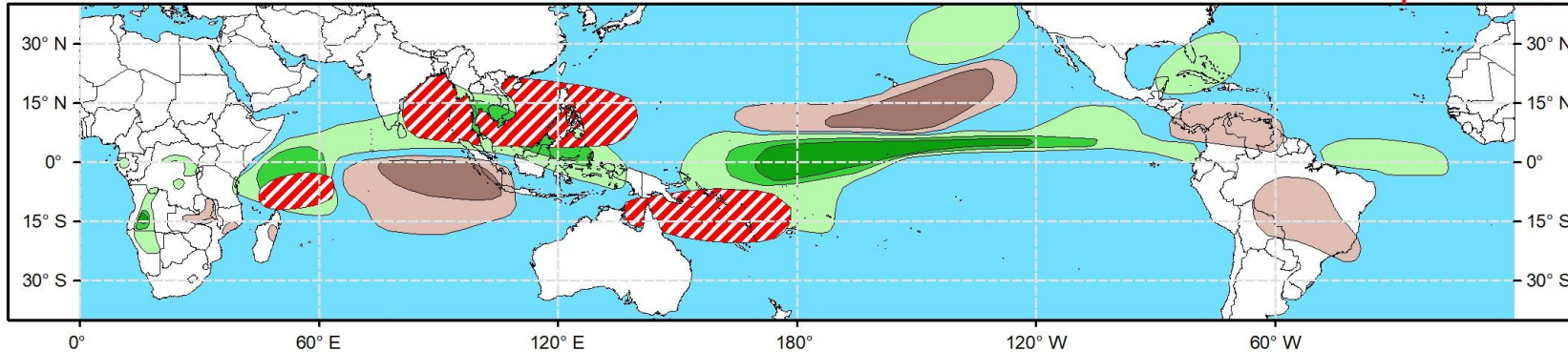


Week 2 - Valid: Nov 29, 2023 - Dec 05, 2023



Week 3 - Valid: Dec 06, 2023 - Dec 12, 2023

**** 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*

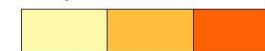
**Below-Average
Rainfall Probability**



>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
Upper third of the historical range*

**Below-Average
Temperatures Probability**



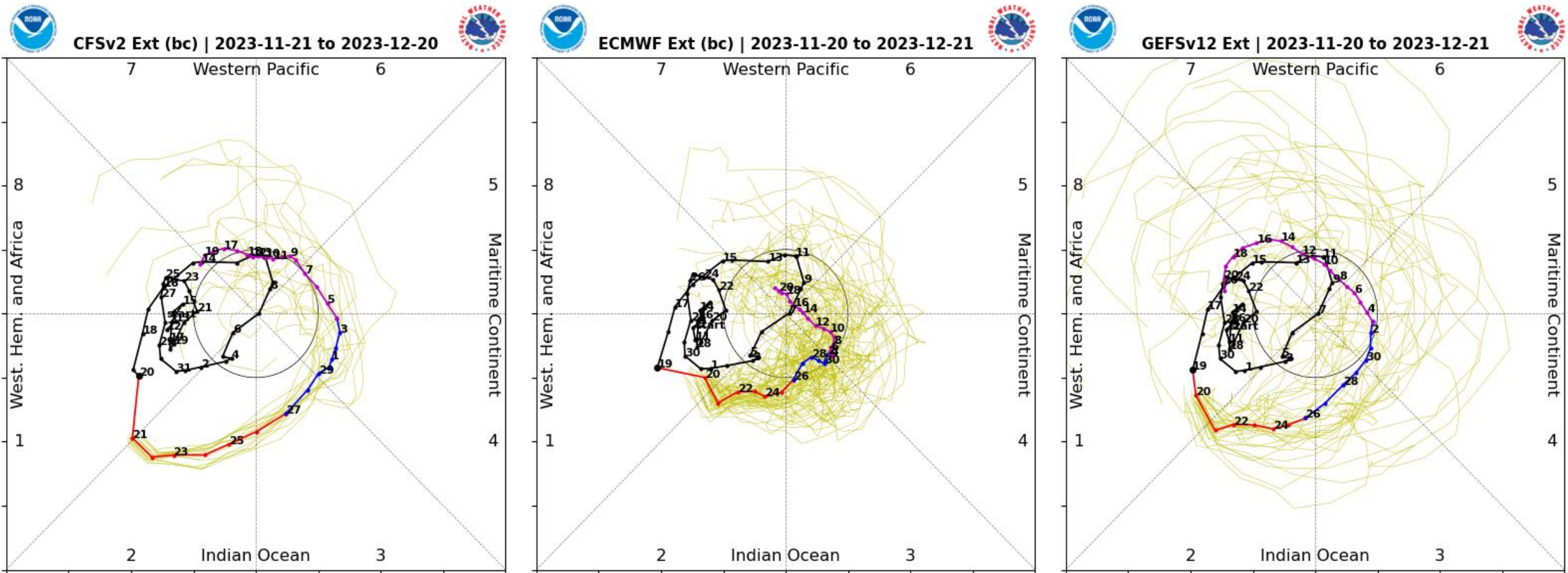
>50% >65% >80%

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

**Issued: 11/21/2023
Forecaster: Novella**

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RMM Index Observations & Forecasts:

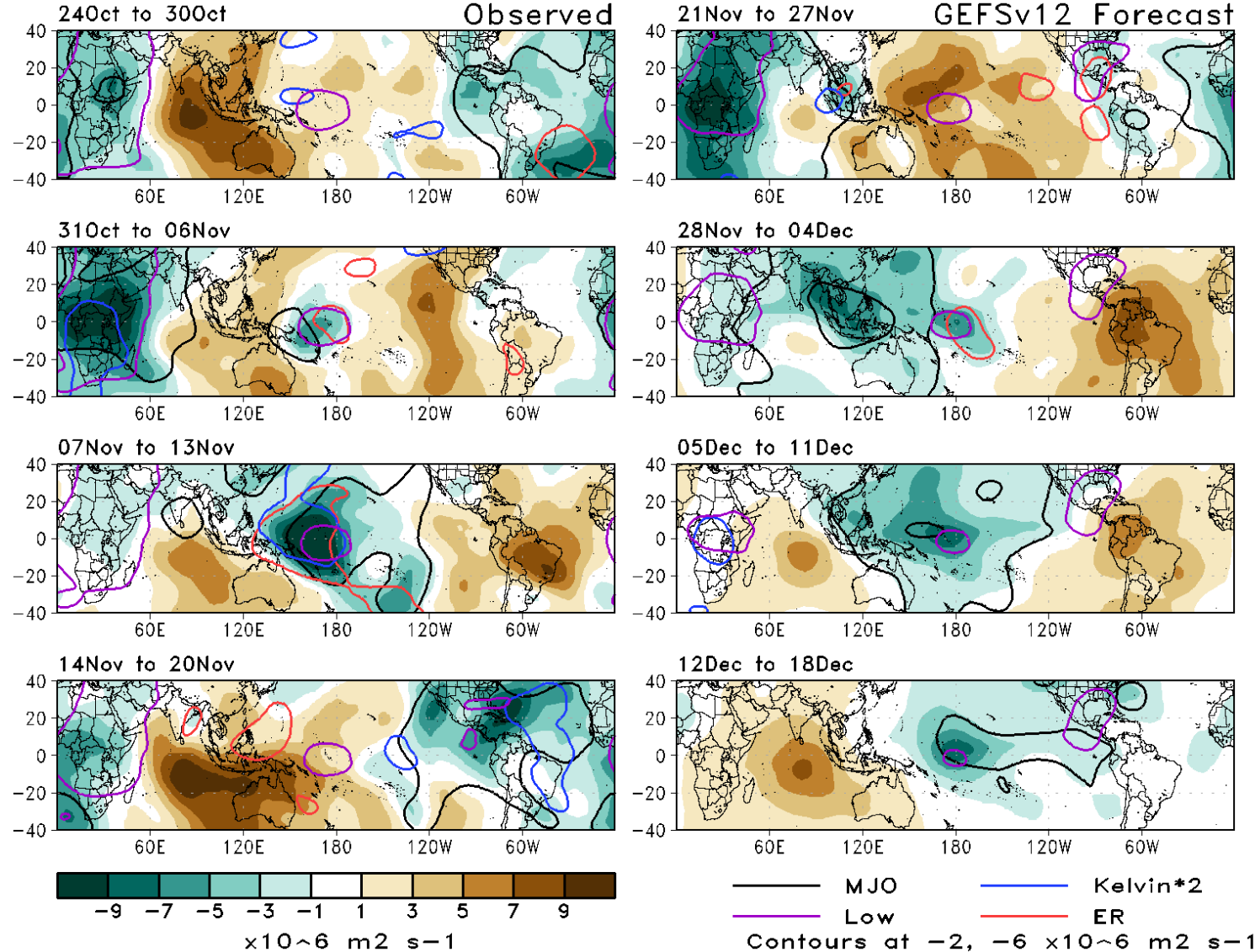


- Good agreement exists between the CFS, GEFs and ECMWF favoring continued eastward propagation of the MJO signal during the next several weeks
- The gradually decrease in amplitude over phases 3 to 5 is likely tied to destructive interference with the broadly suppressed convective low frequency footprint over this part of the tropics.

200-hPa Velocity Potential Anomaly Maps:

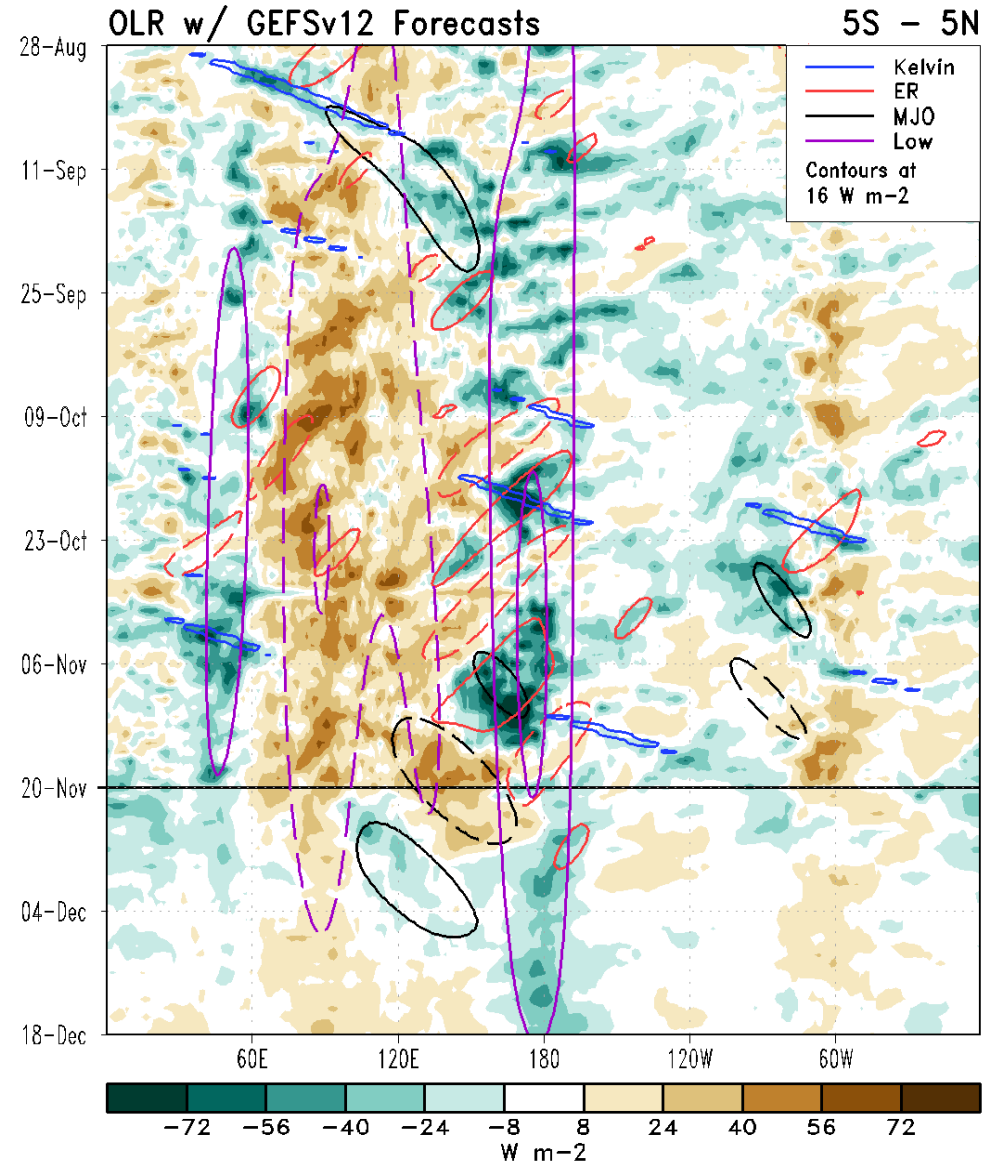
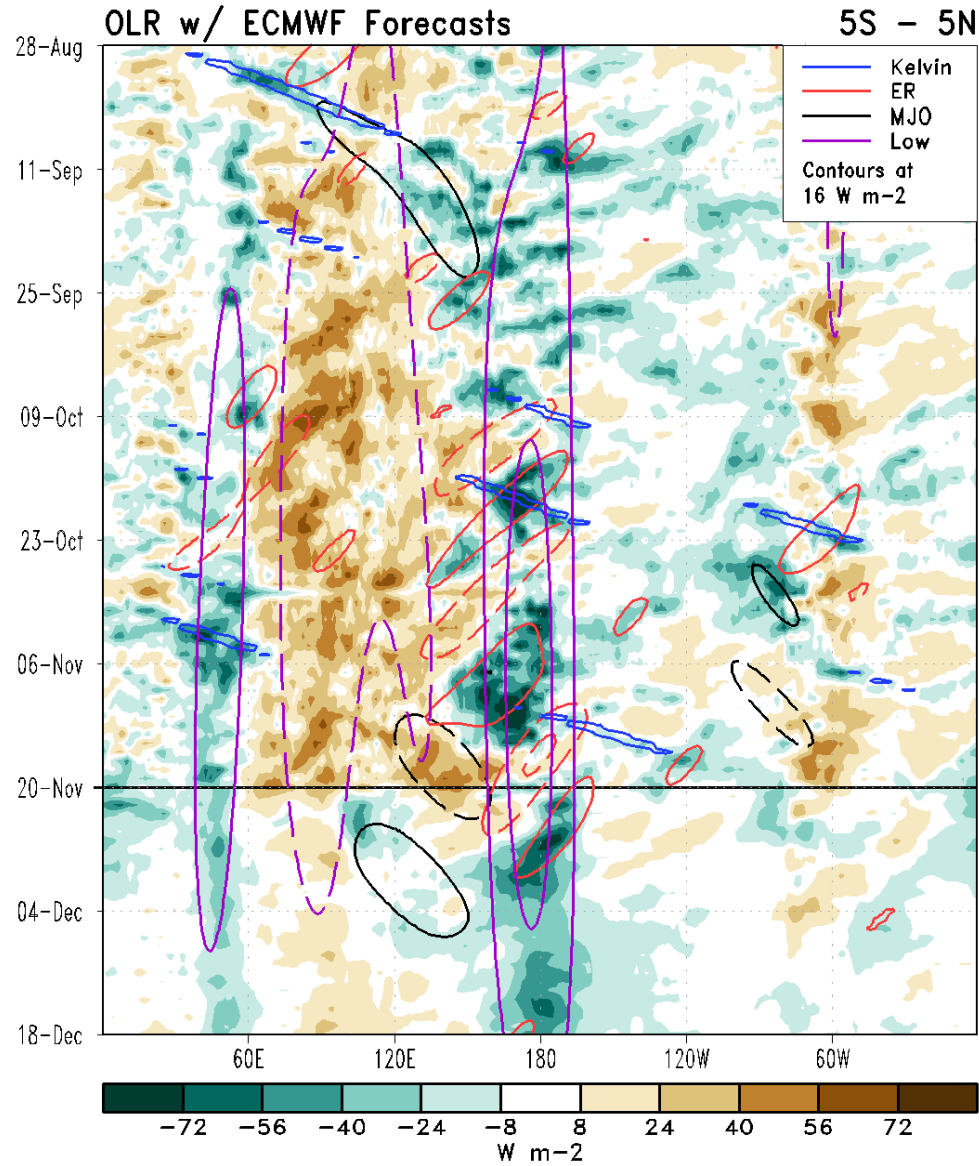
Green: Enhanced Divergence Aloft Brown: Enhanced Convergence Aloft

CHI200 7-Day Means



- A wave-1 pattern has emerged since mid-November, with **MJO**, **KW**, and **Low Frequency** variability coming through the filtering over the tropical Americas and Africa recently.
- A wave-1 pattern is maintained in the GEFS forecasts as the enhanced envelope shifts across the Indian Ocean, Maritime Continent, and returning to the western Pacific near mid-December.
- The persistently suppressed conditions over the Indian Ocean and Maritime Continent rapidly flip sign as the MJO propagates through.

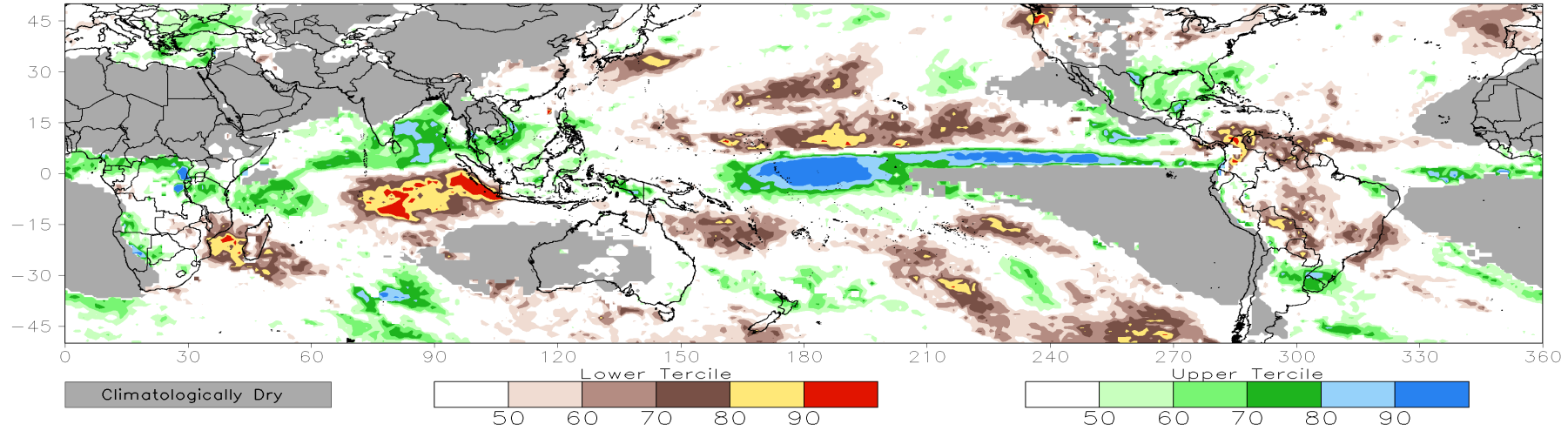
Outgoing Longwave Radiation (OLR) Anomaly Time/Lon Plots:



Consolidated Probabilistic Precipitation: Weeks 2 & 3

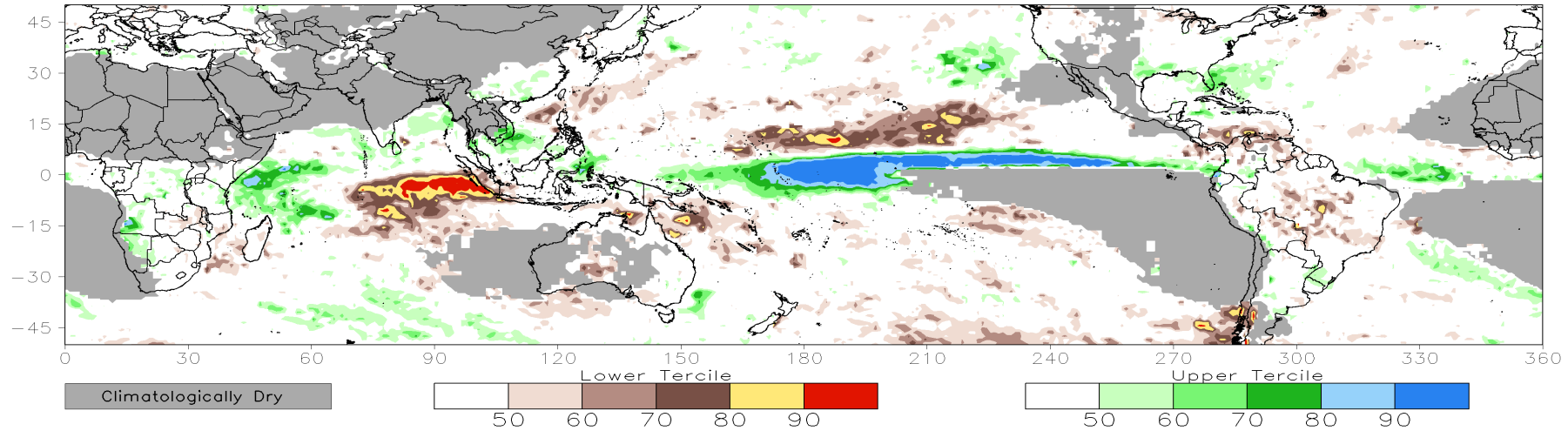
CONS 00z: Week2 Probability for Total Rainfall Below(Above) Lower(Upper) Tercile (%)

Valid: 29Nov2023–05Dec2023



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

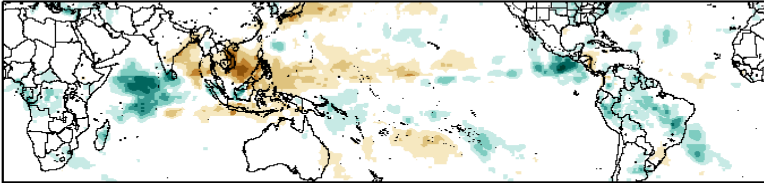
Valid: 06Dec2023–12Dec2023



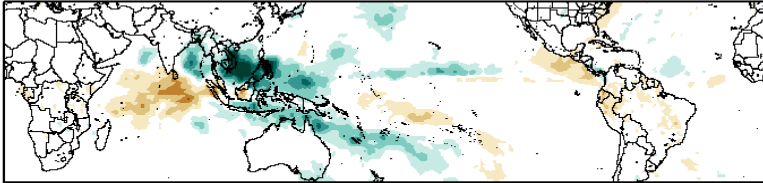
Historical Precipitation Anomalies By MJO Phase:

OND MJO Composite: GPCP1DD (mm/day)

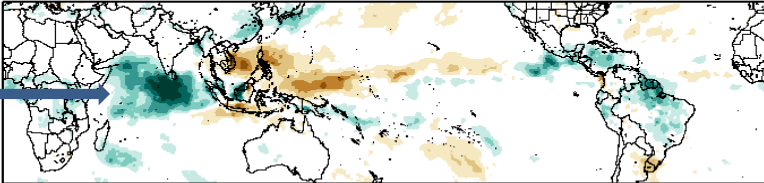
Phase 1



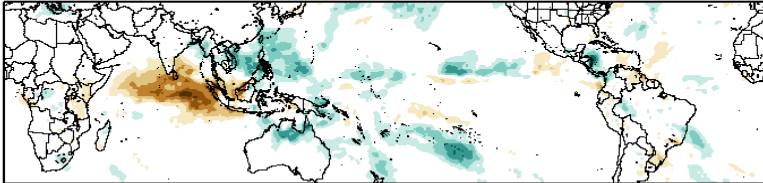
Phase 5



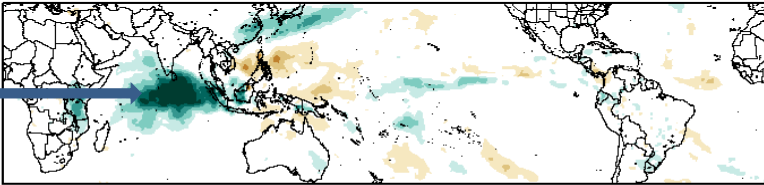
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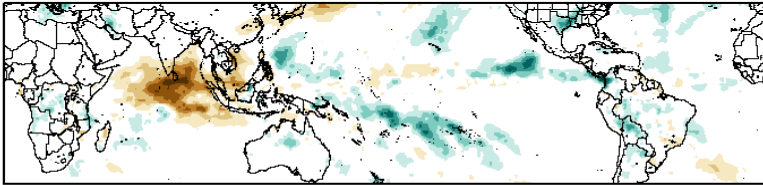
Phase 6



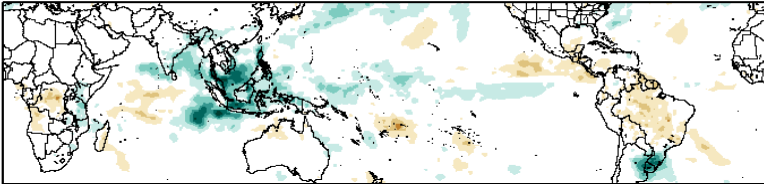
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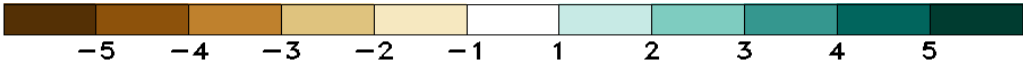
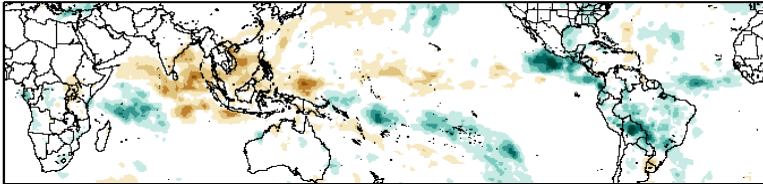
Phase 7



Phase 4

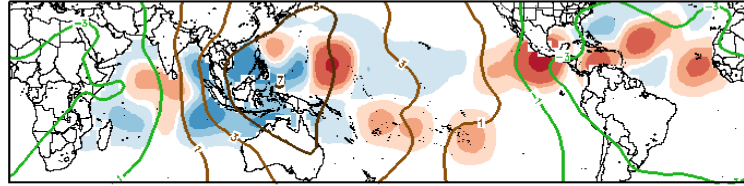


Phase 8

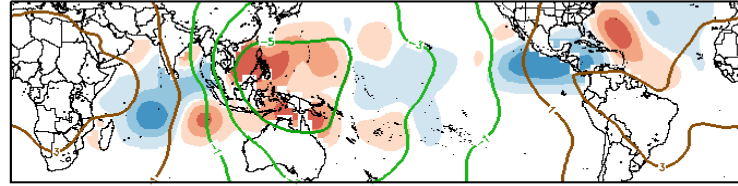


Historical TC Origin Anomalies By MJO Phase & Weeks 2+3 Genesis Climo:

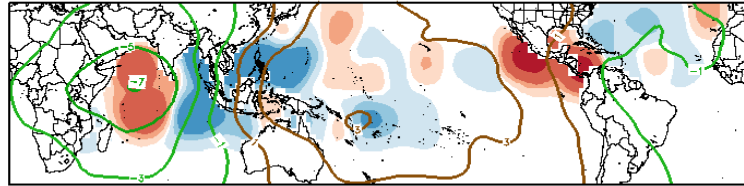
OND MJO Composite: Mean TC Origin Density Anomaly ($\#TCs/277km^2*100$)
w/ OND CHI200 ($\times 10^{-6} m^{-2} s^{-1}$) / Contours every $2 \times 10^{-6} m^{-2} s^{-1}$



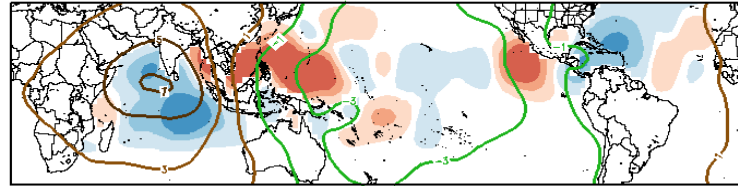
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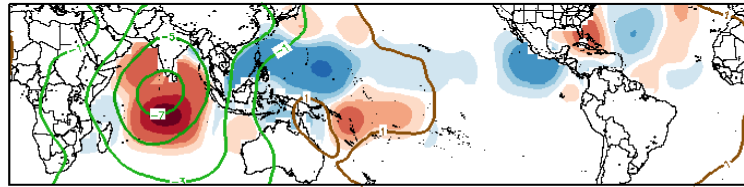
Phase 5



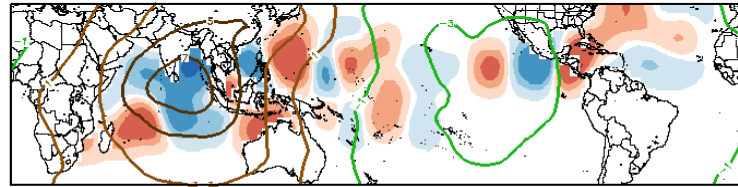
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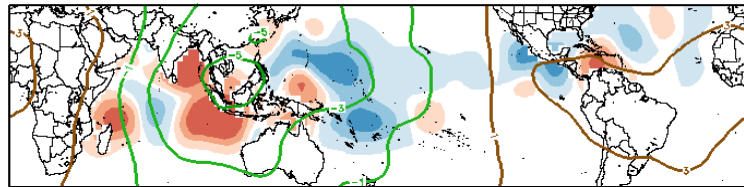
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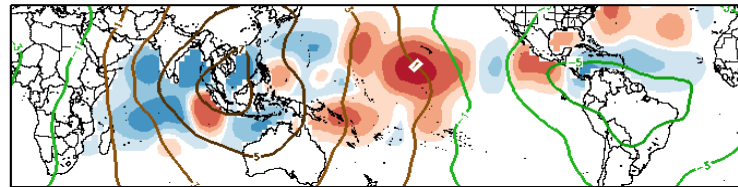
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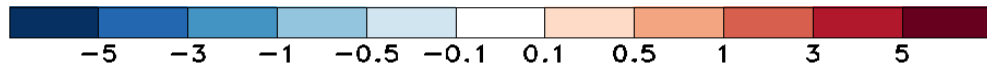
Phase 7



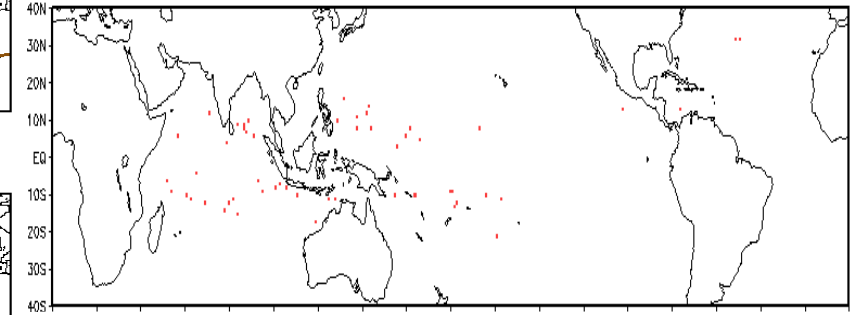
Phase 4



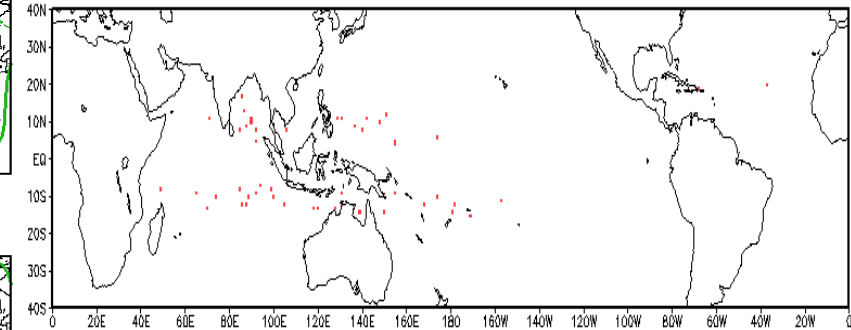
Phase 8



Observed TC Genesis, 1979–2021
7-day Period 1129 to 1205

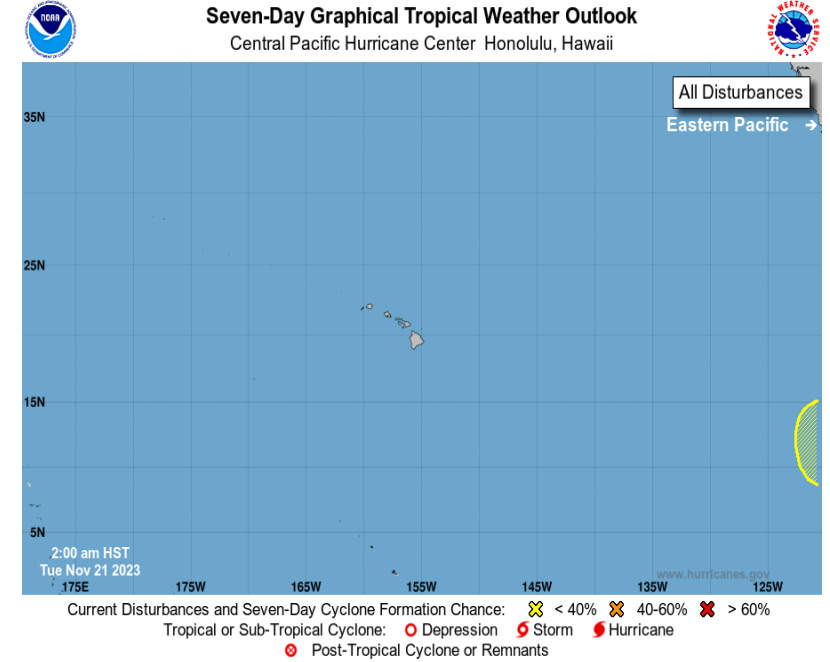
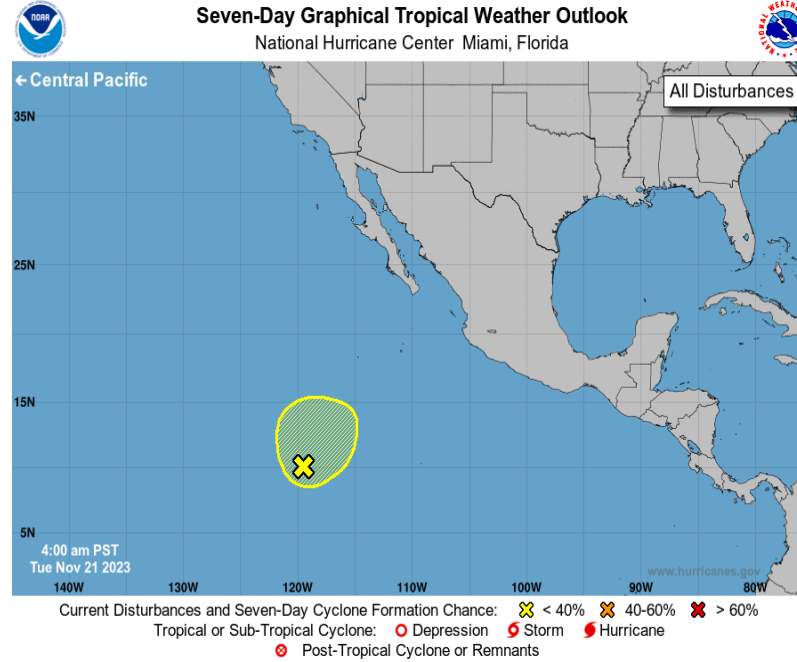
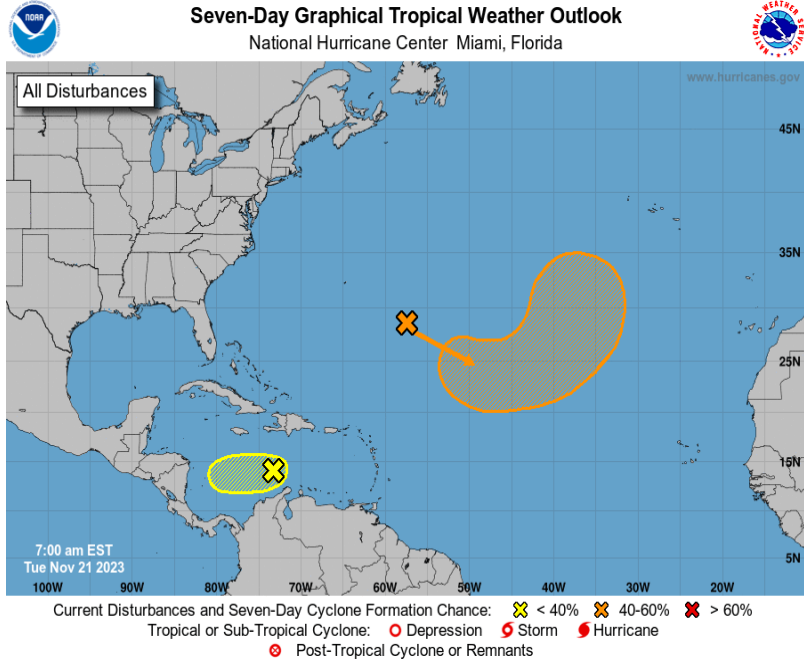


Observed TC Genesis, 1979–2021
7-day Period 1206 to 1212



Experimental

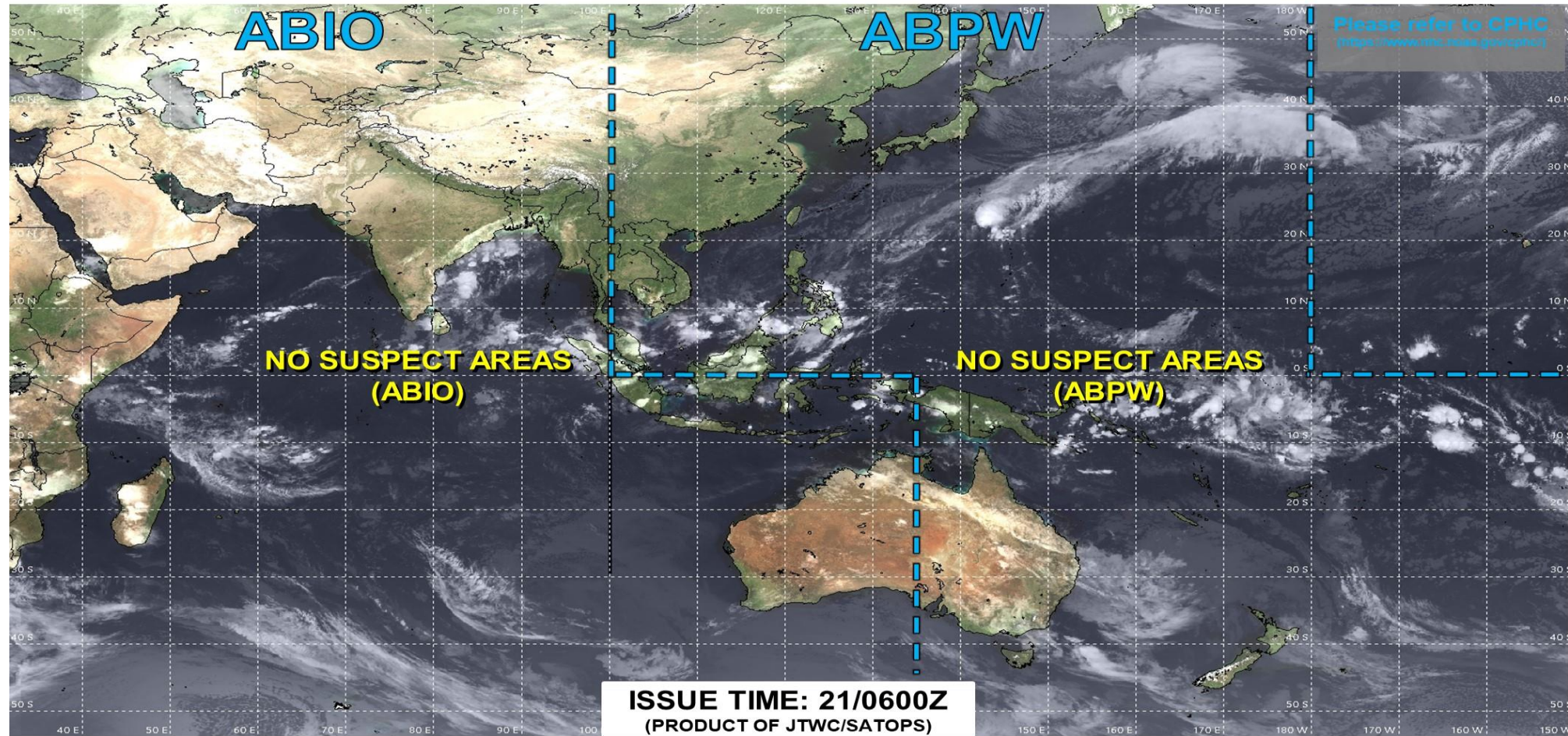
Tropical Cyclone Monitoring/Forecast: NHC / CPHC



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



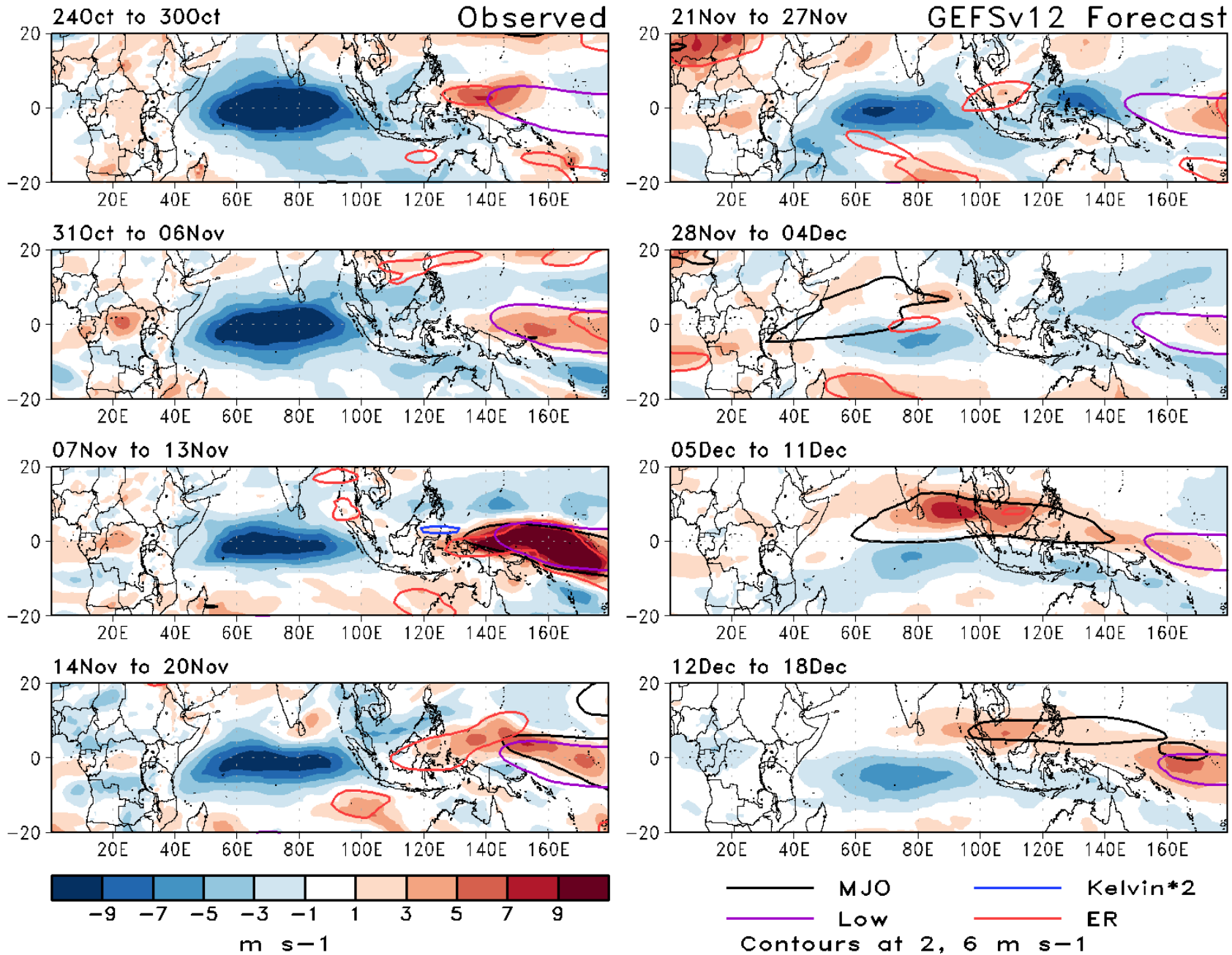
TC development likely within 24 hours (Reference TCFA)



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

 Tropical Cyclone (Reference Warning)

UWND850 7-Day Means



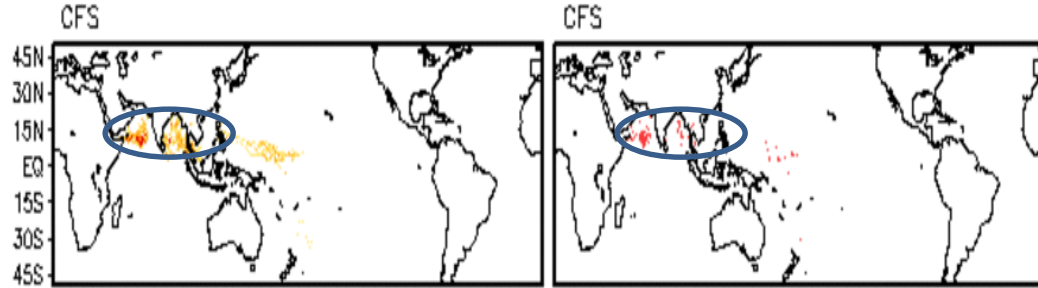
Multi-Model TC Track Densities: Weeks 2+3

Storm Track Density Distribution, IC=20231120

Week 2 Forecast: 1129-1205

TRACK DENSITY

FILTERED

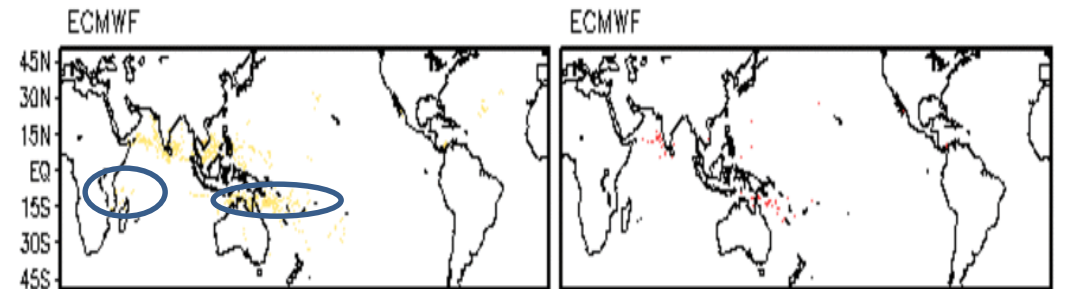
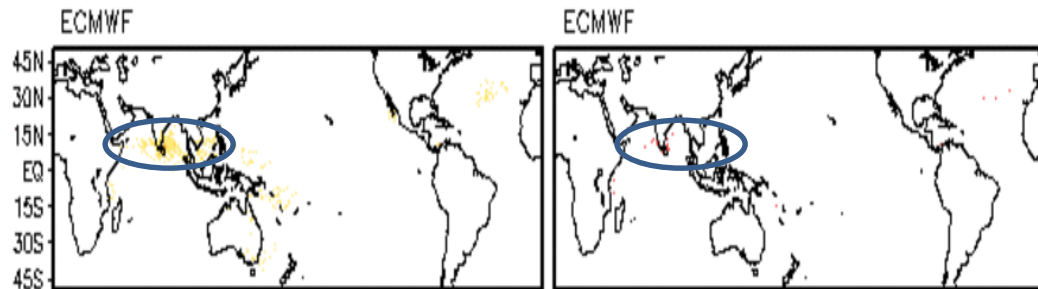
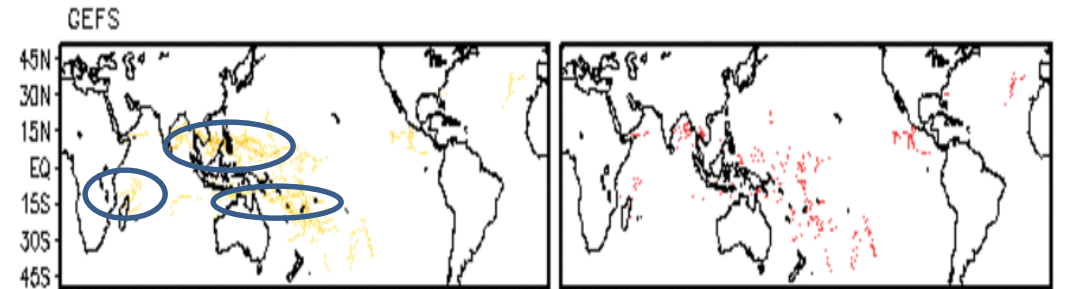
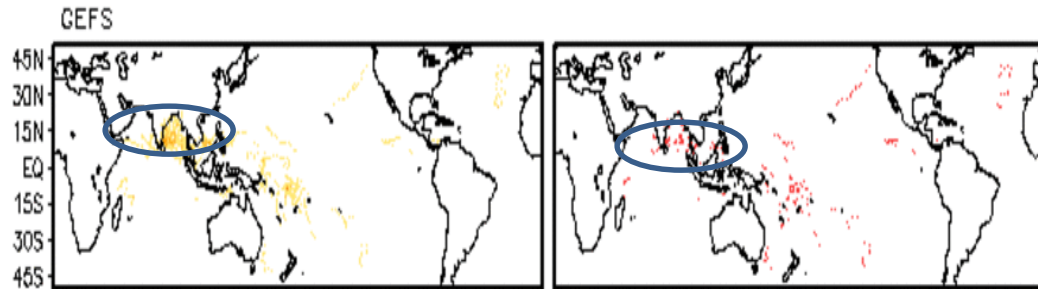
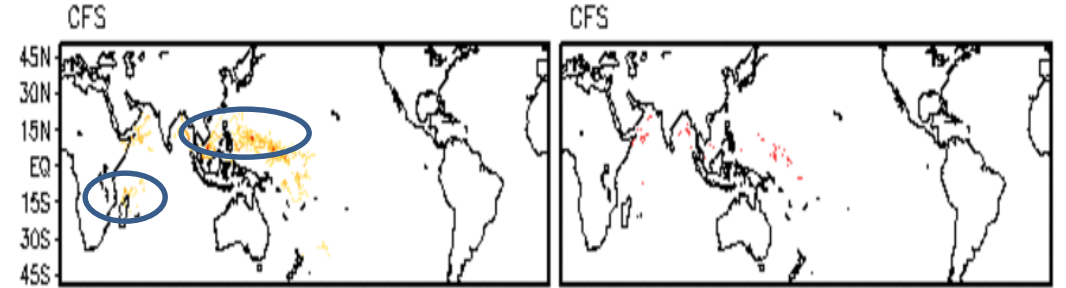


Storm Track Density Distribution, IC=20231120

Week 3 Forecast: 1206-1212

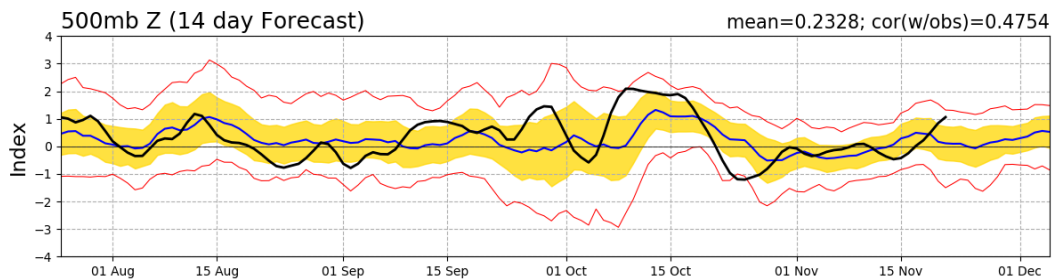
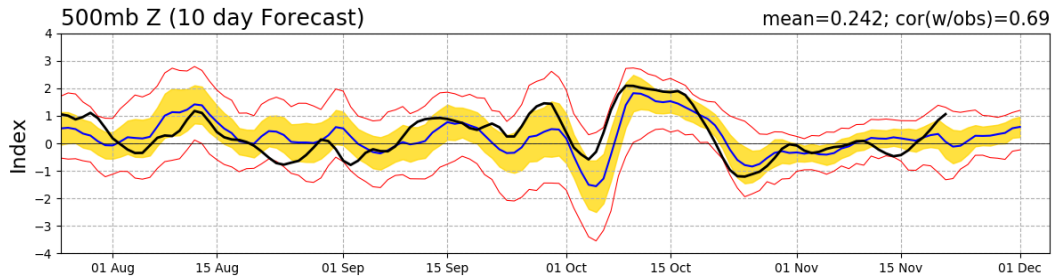
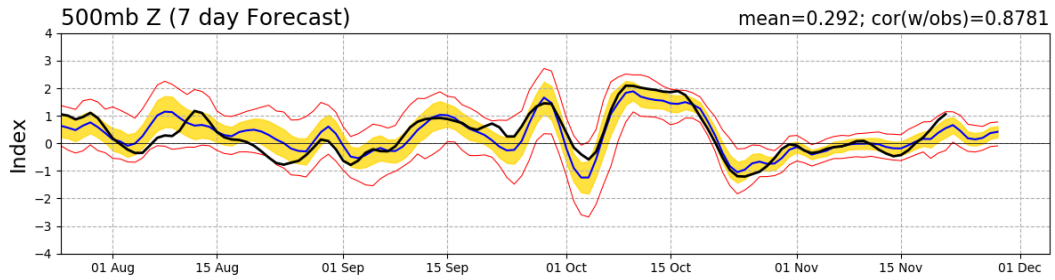
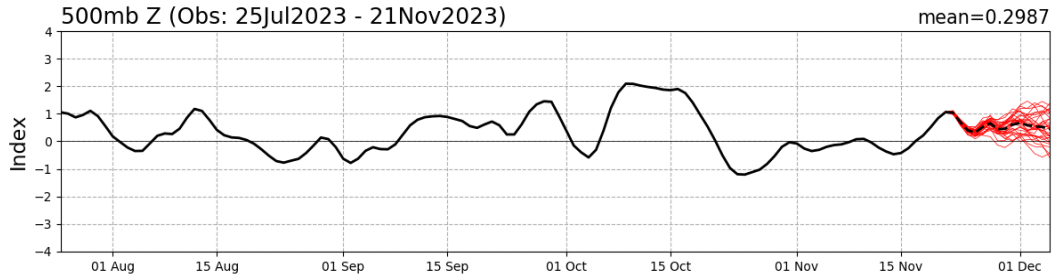
TRACK DENSITY

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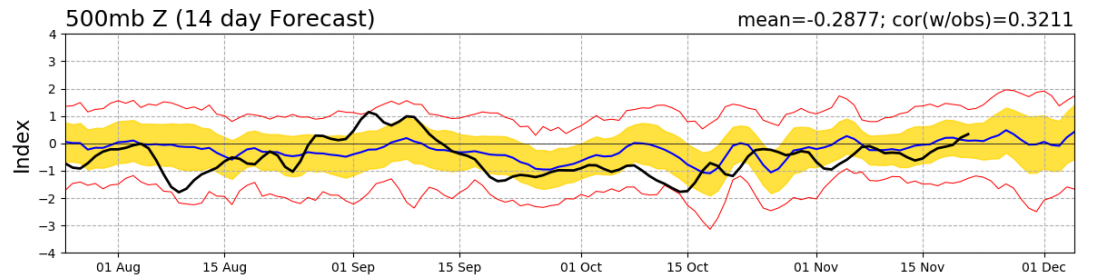
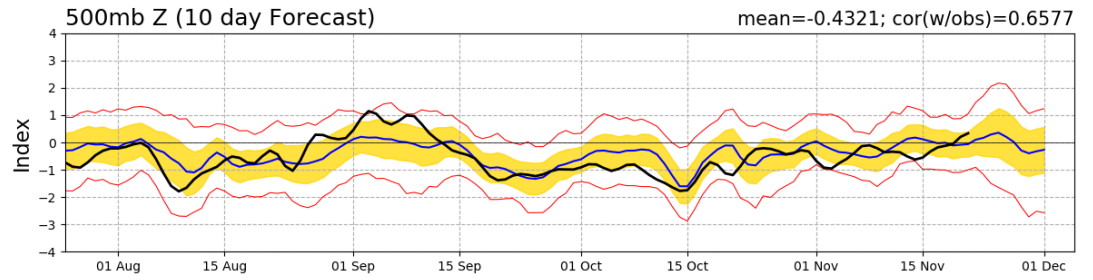
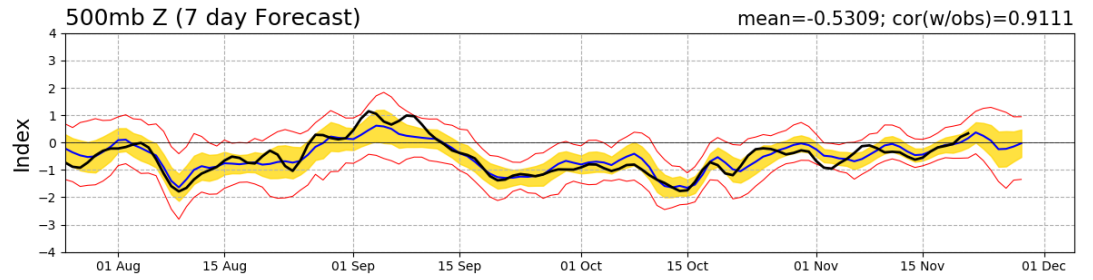
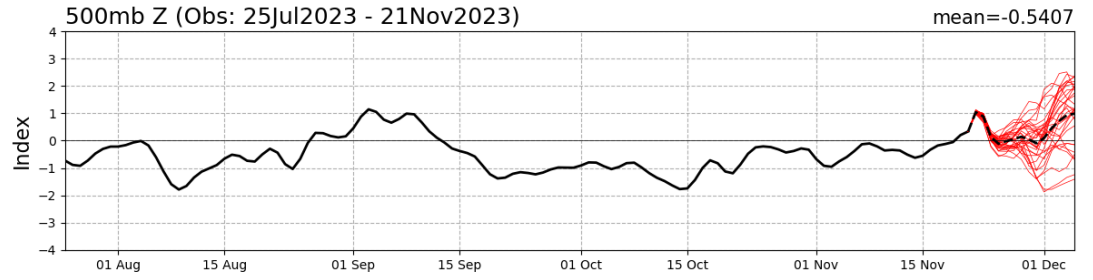


Teleconnection Indices: PNA / AO:

PNA Index: Observed & GEFS Forecasts

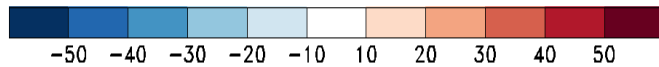
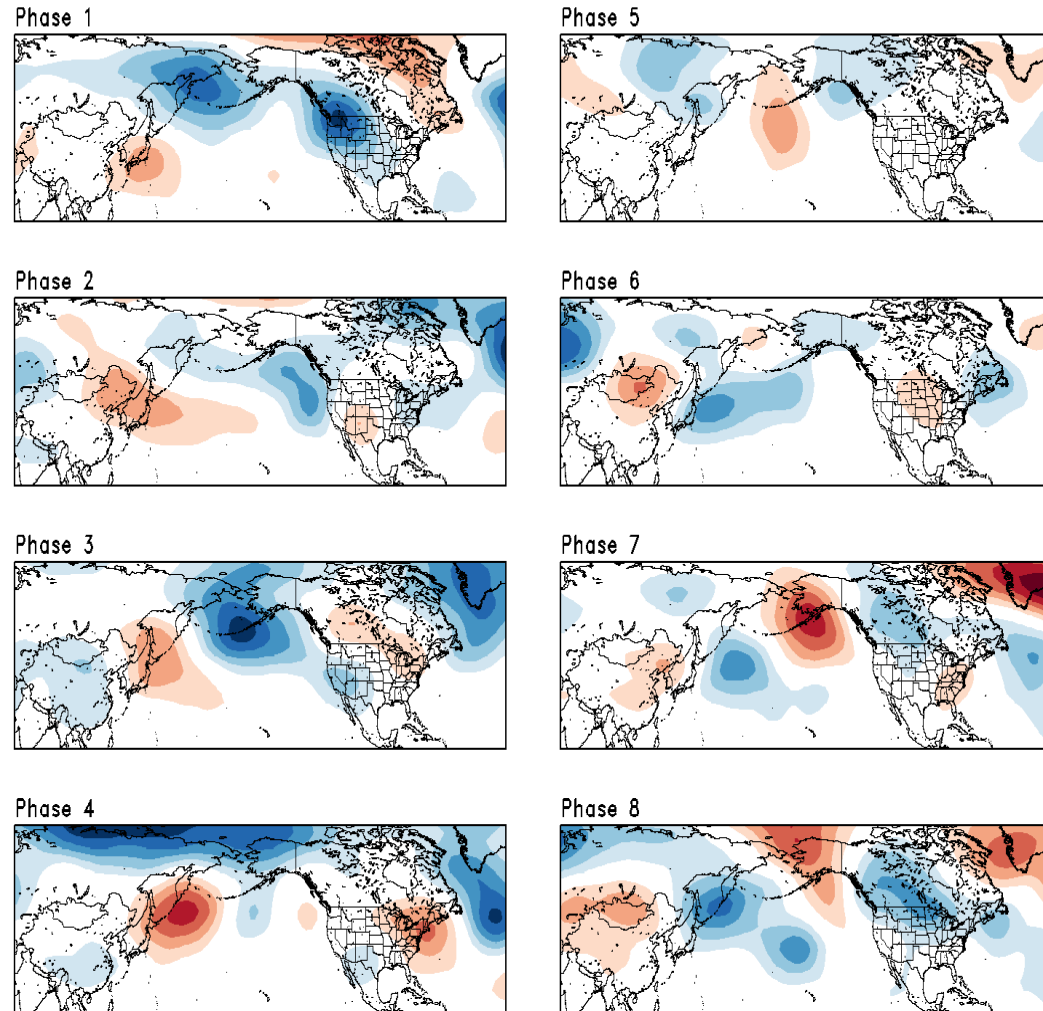


NAO Index: Observed & GEFS Forecasts

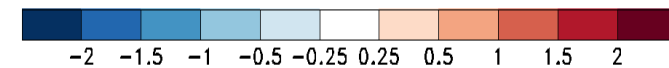
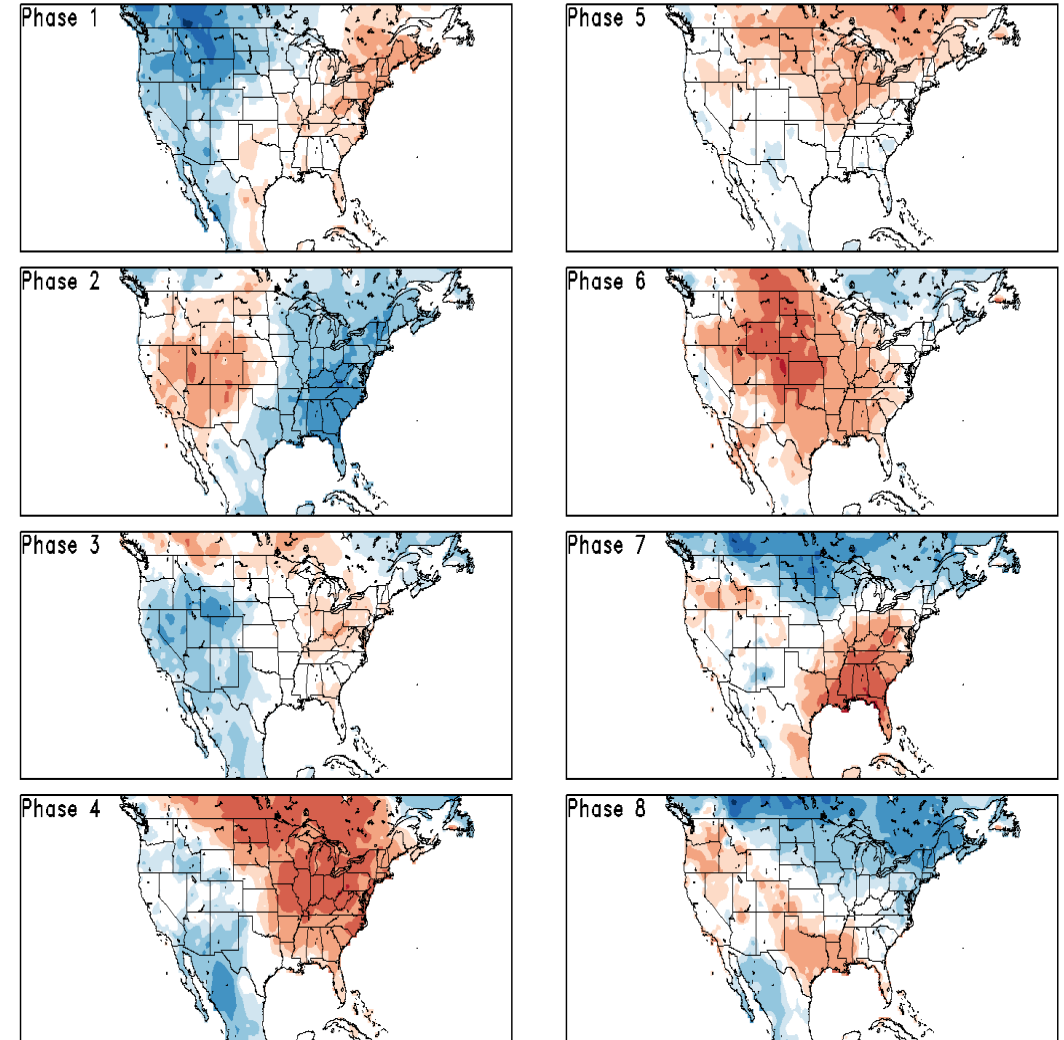


Historical 500-hPa Height & U.S. Temperatures By MJO Phase:

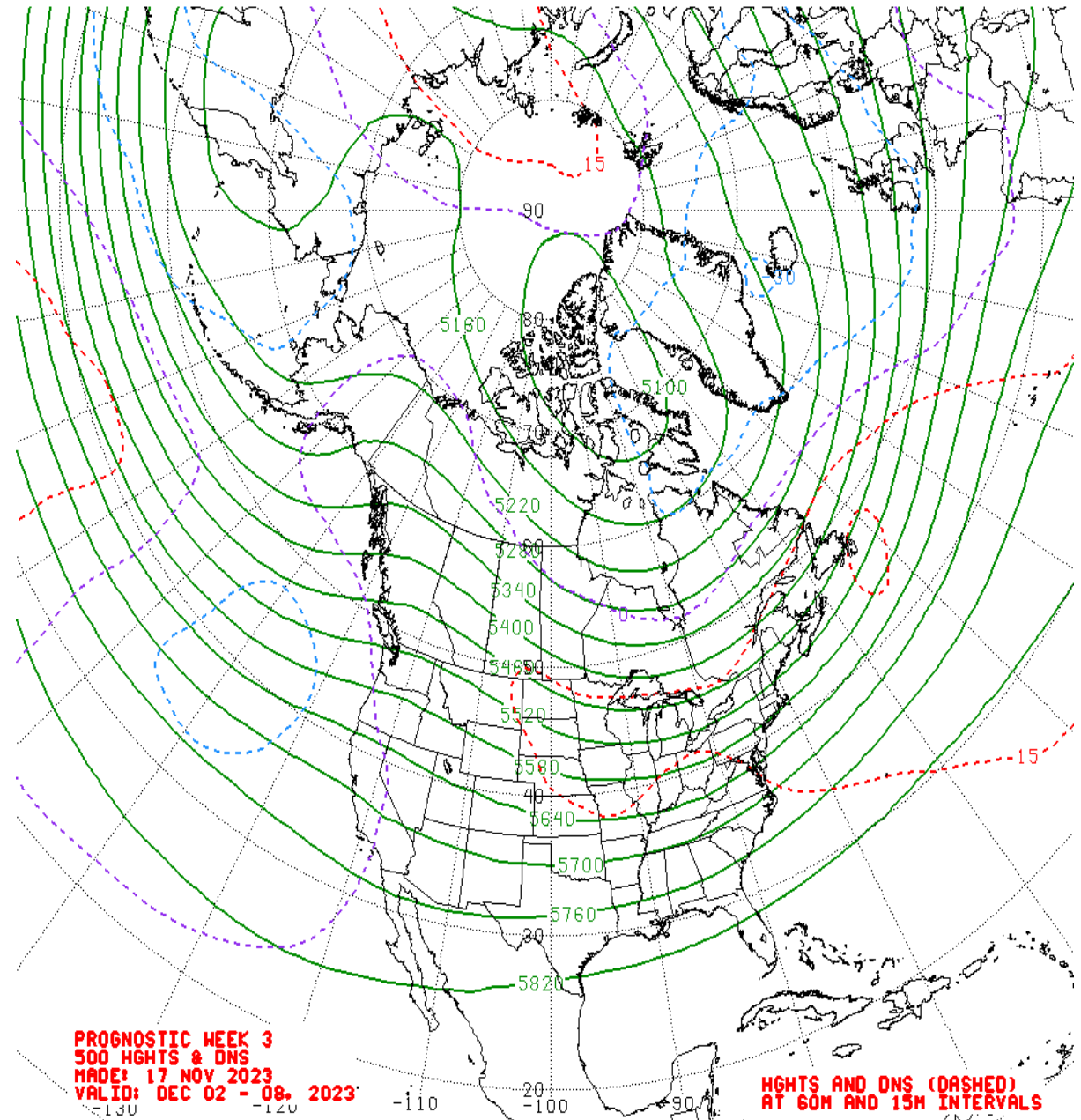
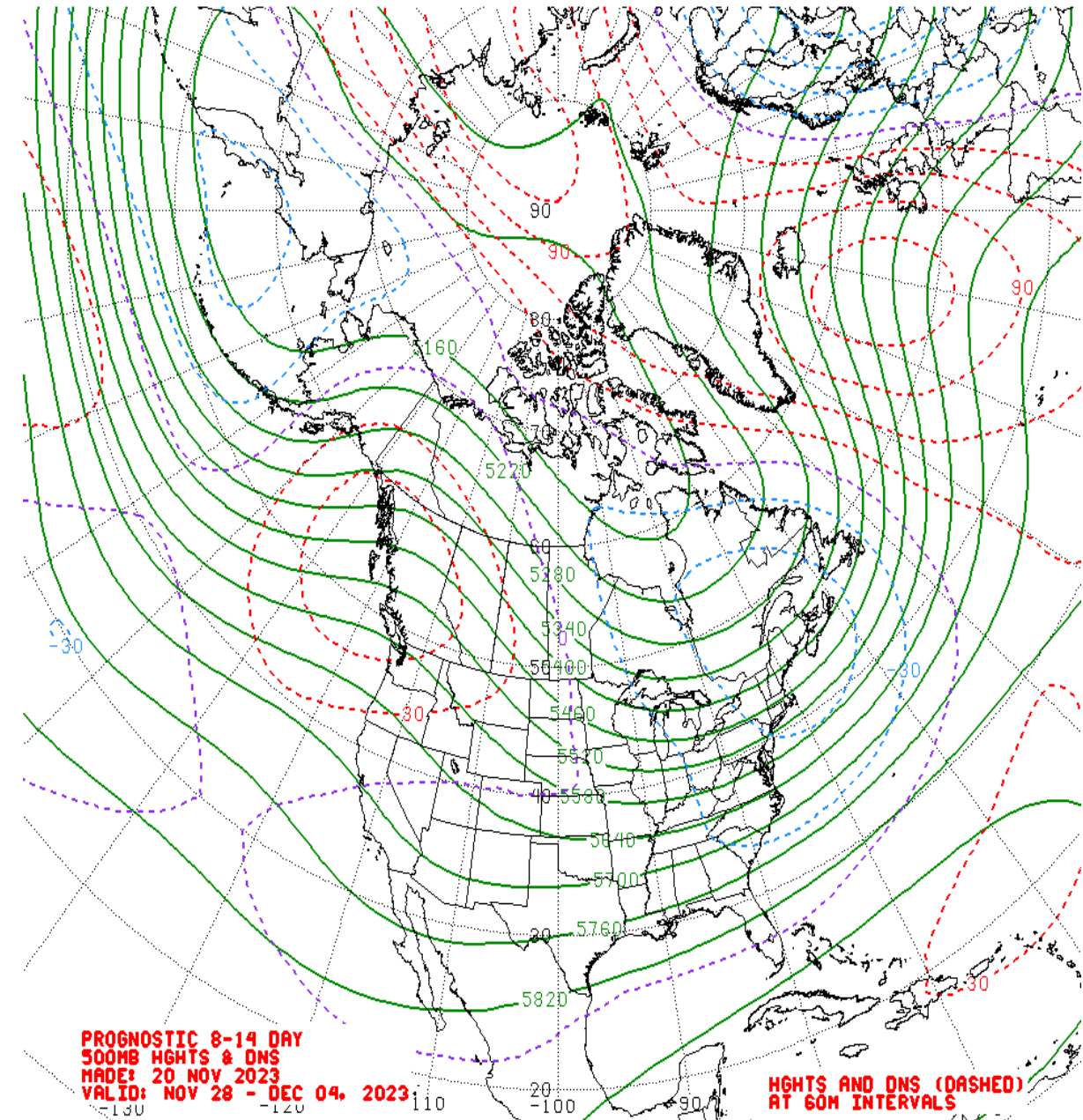
OND MJO Composite: CDAS 500-hPa Height (m)



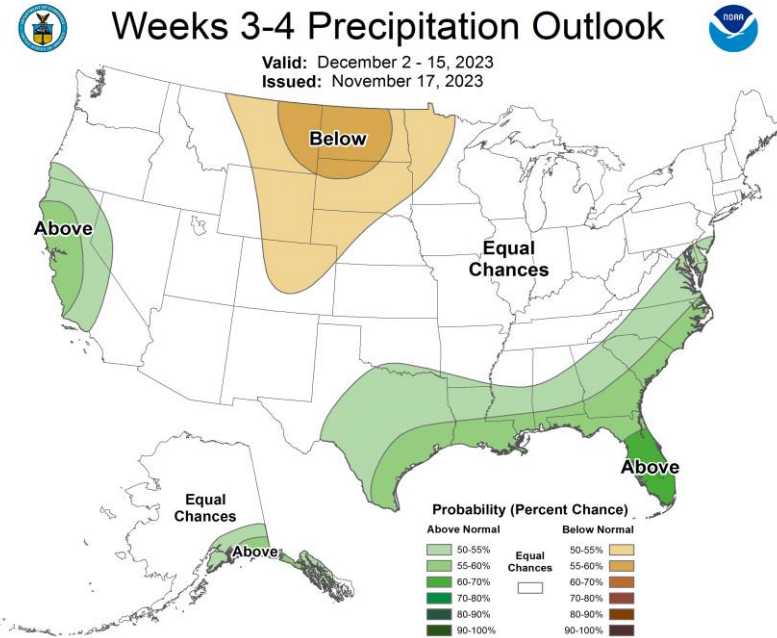
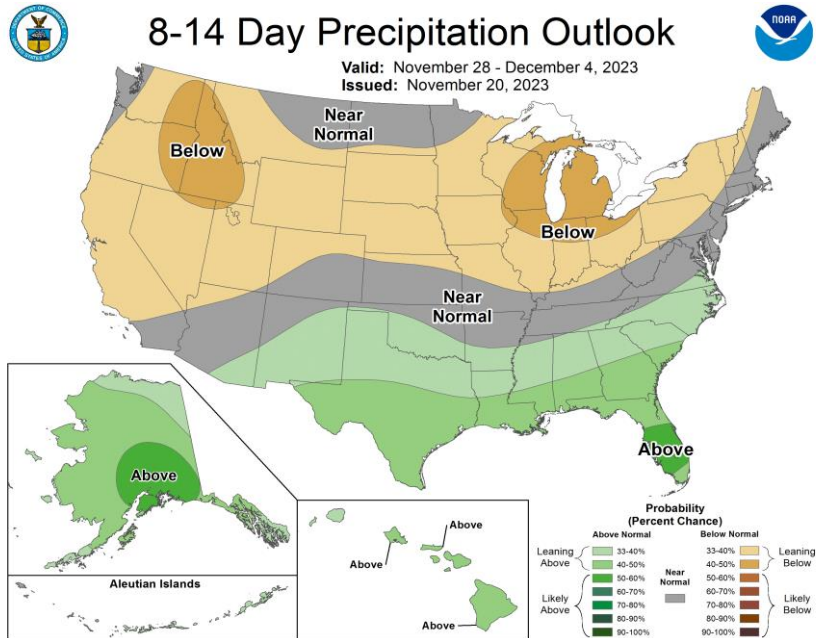
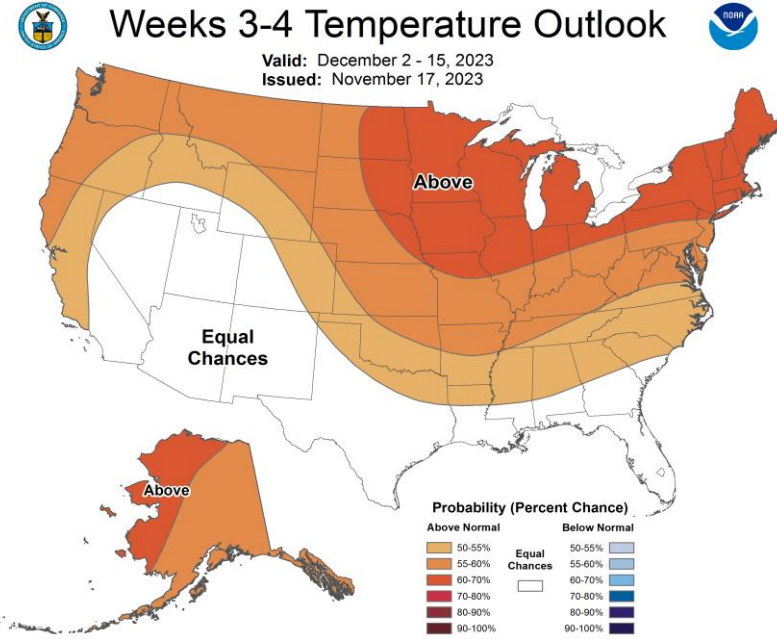
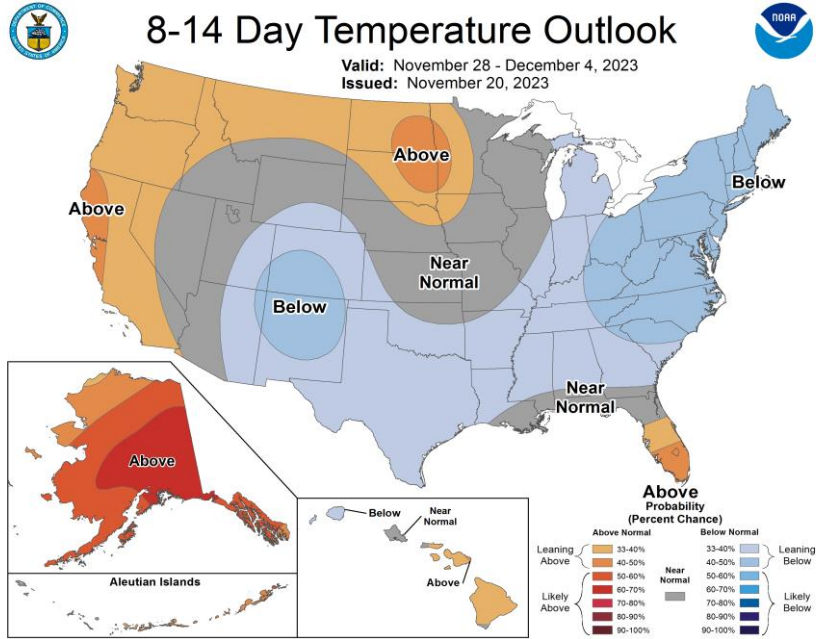
OND MJO Composite: GLBT (degC)



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



Official Temperature & Precipitation Forecasts:



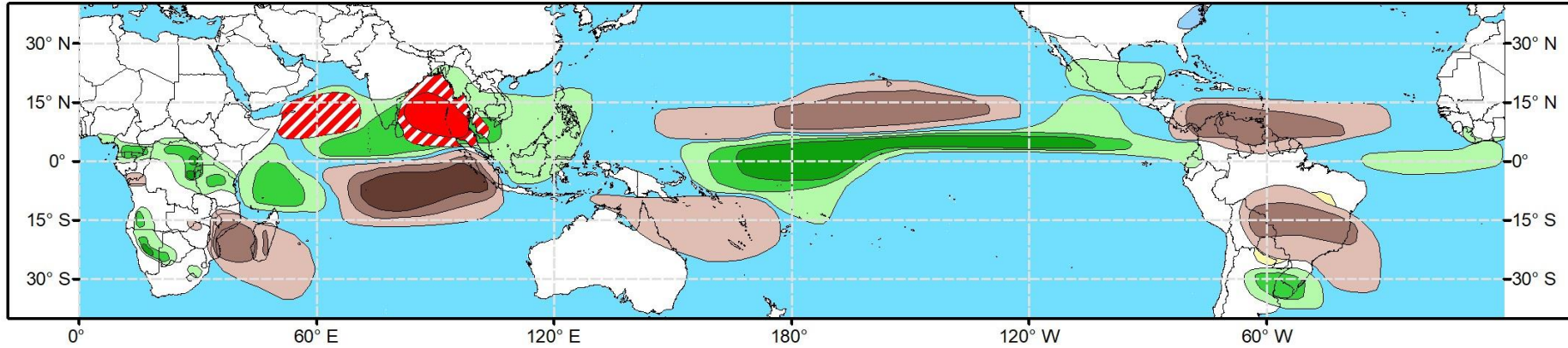


Global Tropics Hazards Outlook

Climate Prediction Center

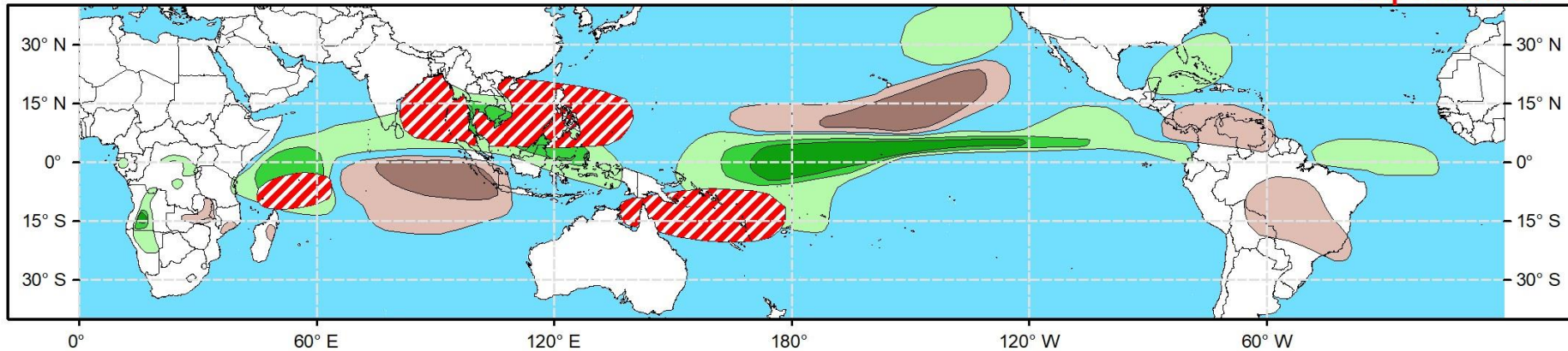


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