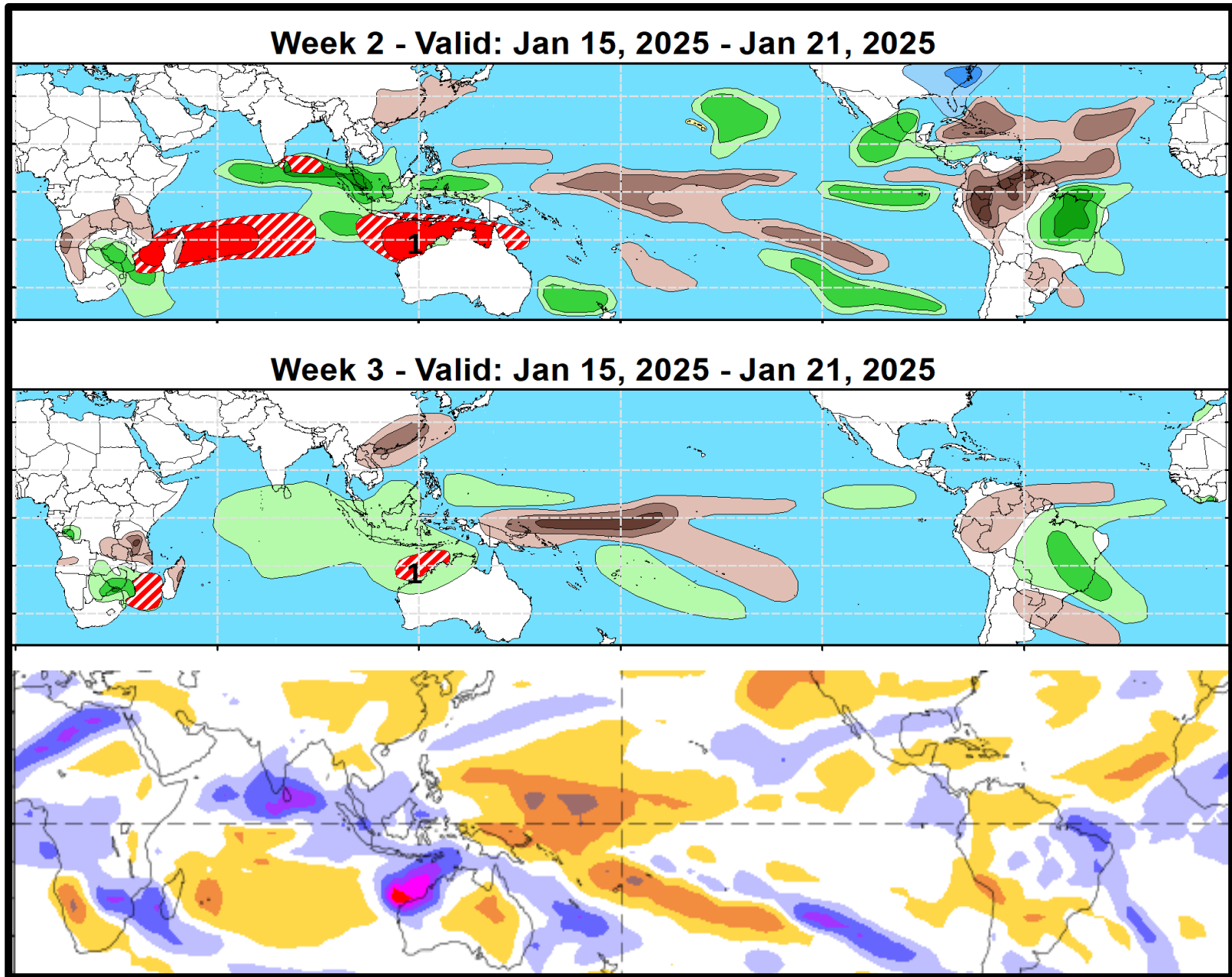
Weeks 2-3 Global Tropics Hazards Outlook

1/21/2025

Danny Barandiaran
NWS / NCEP / Climate Prediction Center

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

- 1: TC Sean



Synopsis of Climate Modes:

ENSO: (Jan 9, 2025 Update) ***next update on Thursday, Feb 13th***

- ENSO Alert System Status: La Niña Advisory
- La Niña conditions are *present* and are expected to persist through Feb-Apr 2025 (59% chance), with a transition to ENSO-neutral likely during Mar-May 2025 (60% chance)

MJO and other subseasonal tropical variability:

- After becoming incoherent during early January, RMM observations showed the MJO signal sharply regaining amplitude over the Western Hemisphere and then quickly propagating into the Indian Ocean.
- As the MJO moves into the Maritime Continent constructive interference with the La Nina base state would tend to amplify the MJO. However, RMM forecasts indicate a weakening of the MJO when that interference should occur.
- The large-scale environment is expected to bring increased chances for tropical cyclone development in the Indian Ocean particularly near the northwest coast of Australia.
- The MJO over the Maritime Continent historically favors a warm response over the central and eastern CONUS, which would be a welcome change to the frigid conditions experienced recently for much of the Lower 48.

GTH Outlook:

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Climate Prediction Center

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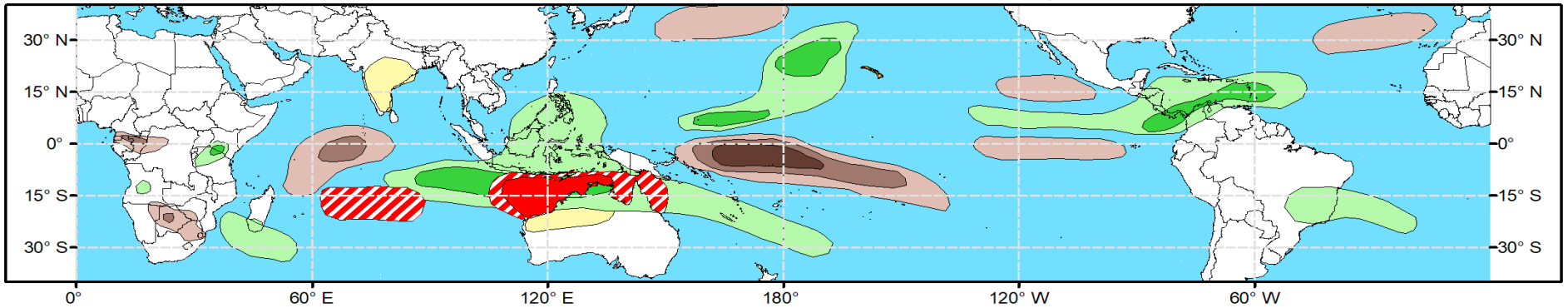

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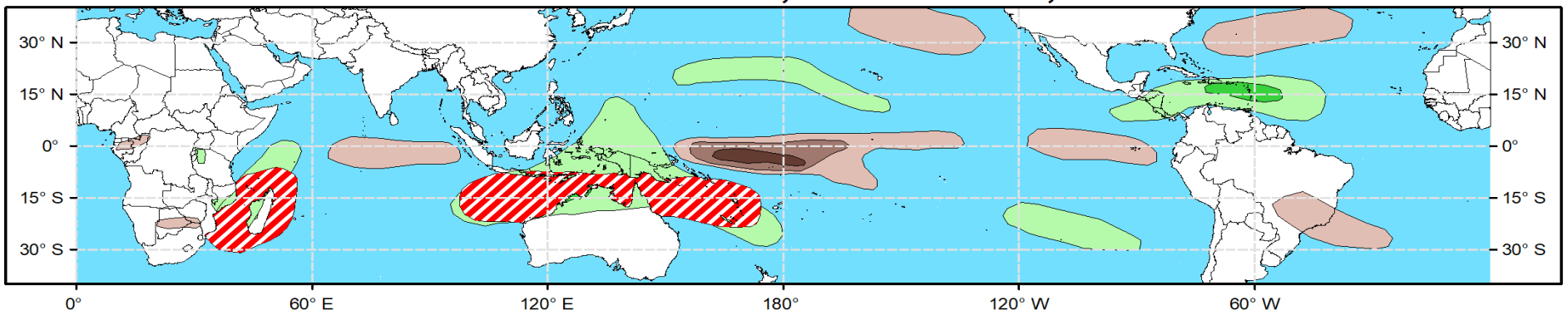

Tropical Cyclone (TC) Formation Probability

>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 Upper third of the historical range

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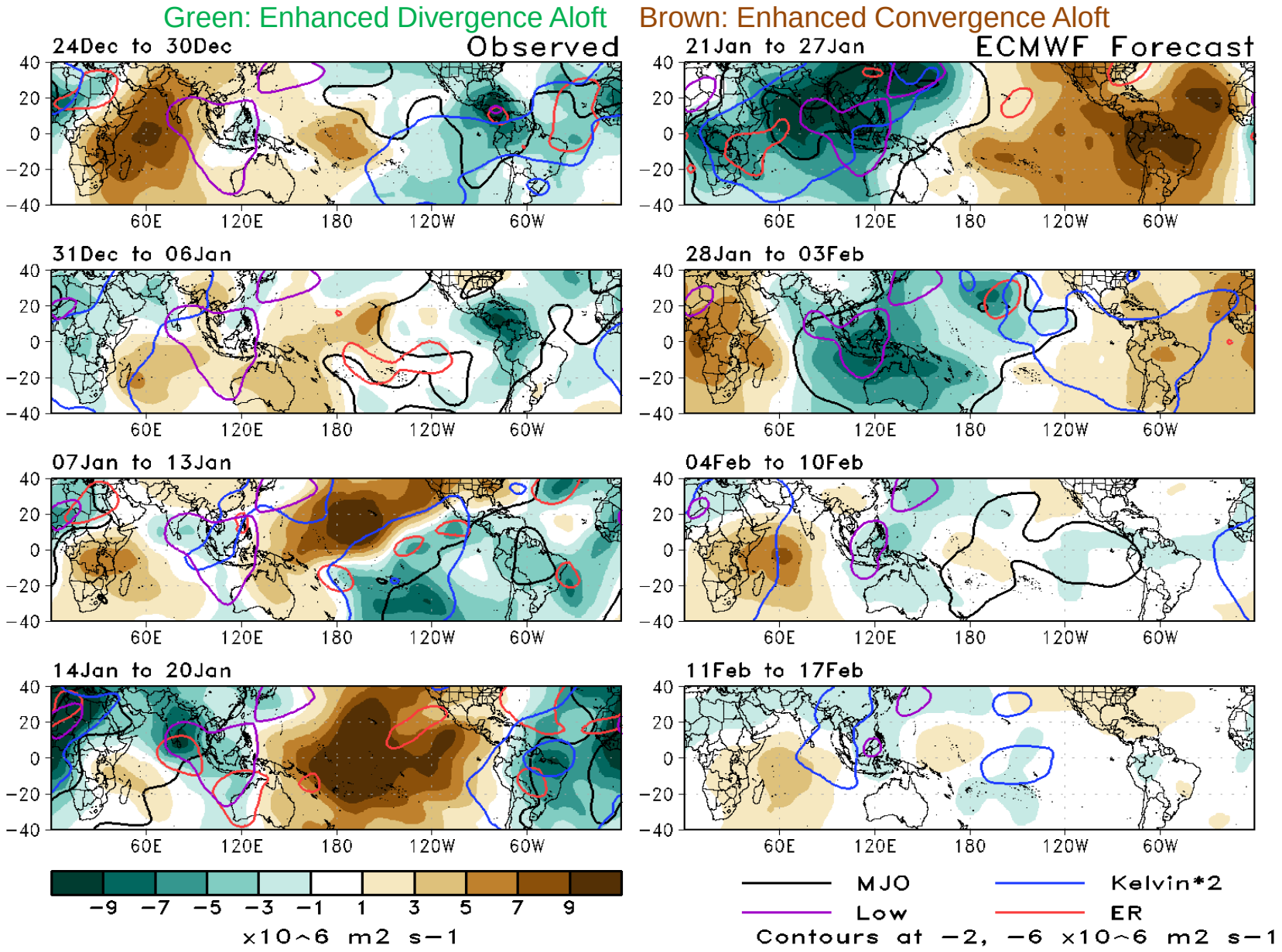
200-hPa Velocity Potential Anomaly Maps:

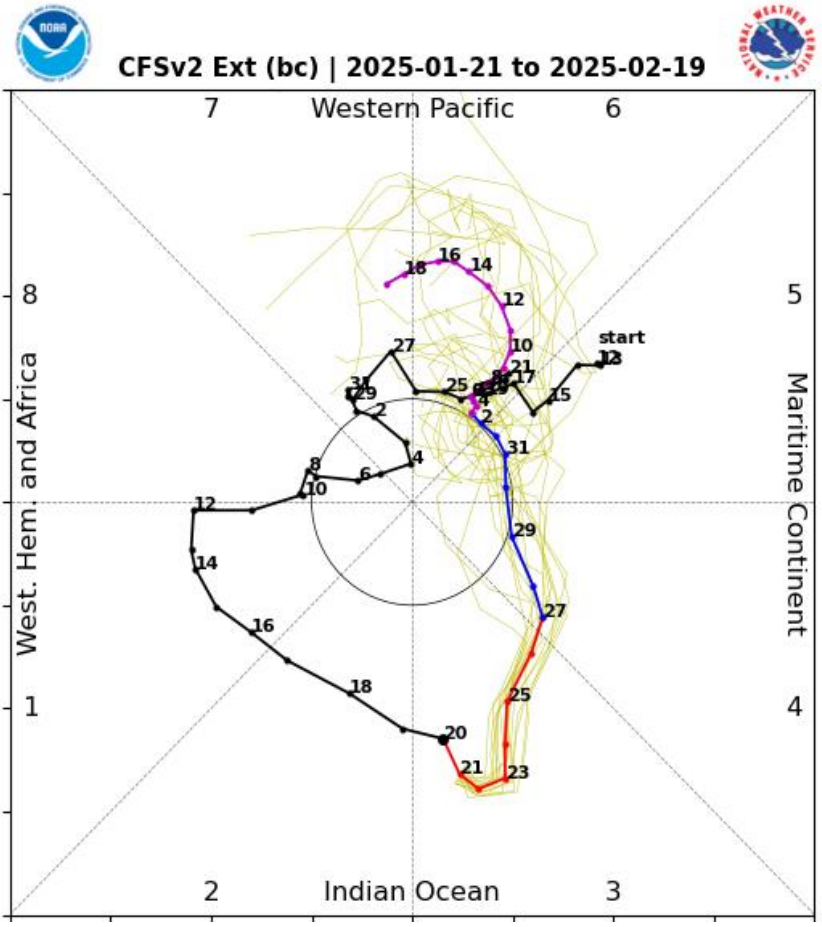
- The upper-level pattern became quite disorganized during early January but has since redeveloped the wave-1 asymmetry characteristic of MJO activity.

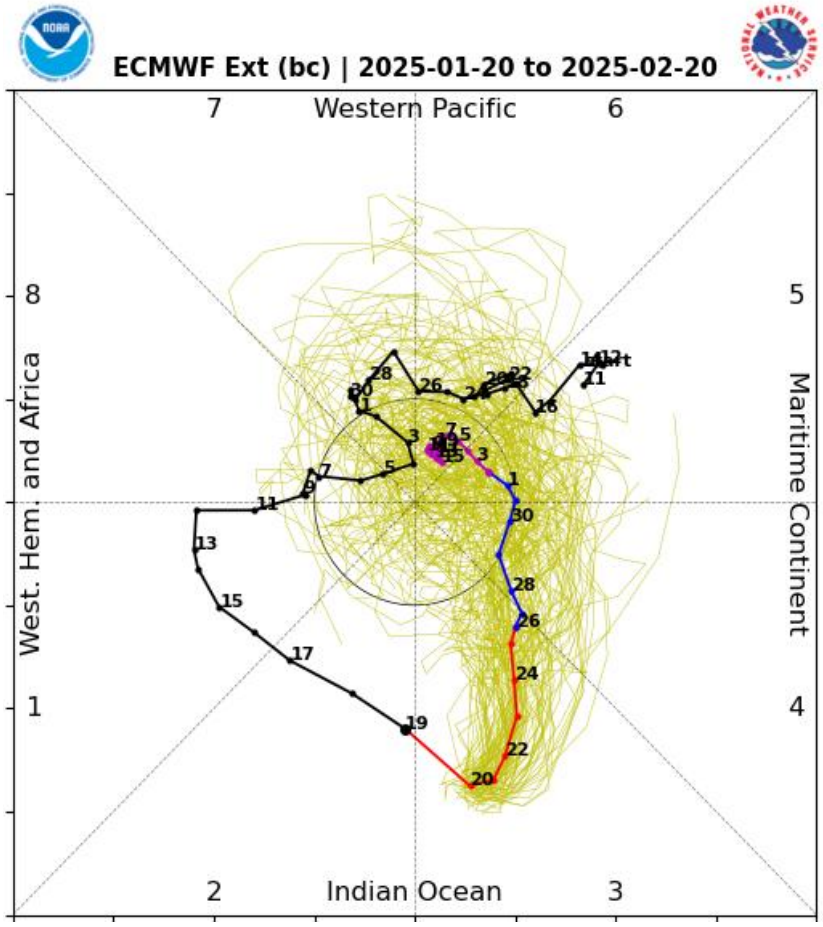
- The convergence/divergence dipole has become very amplified over the Western Hemisphere, while the leading edge of the enhanced convective envelope has moved over the western Indian Ocean.

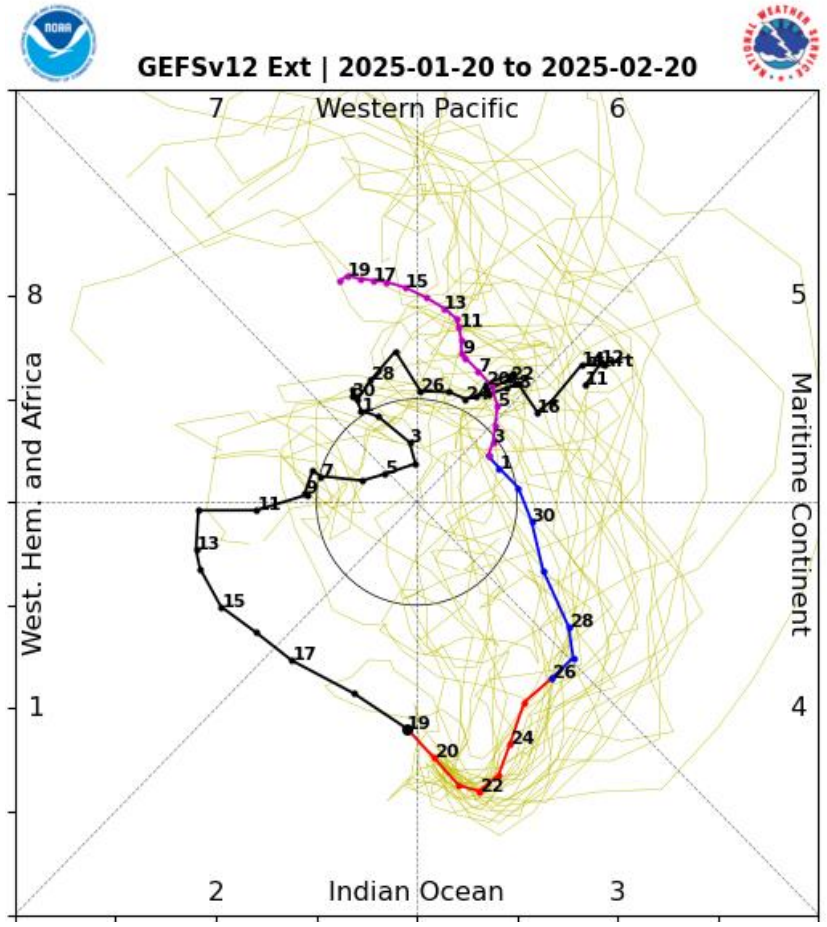
- The ECMWF indicates a robust MJO during week-1 that gradually weakens, likely the result of increasing destructive interference with the La Nina base state.



RMM Index Observations & Forecasts:

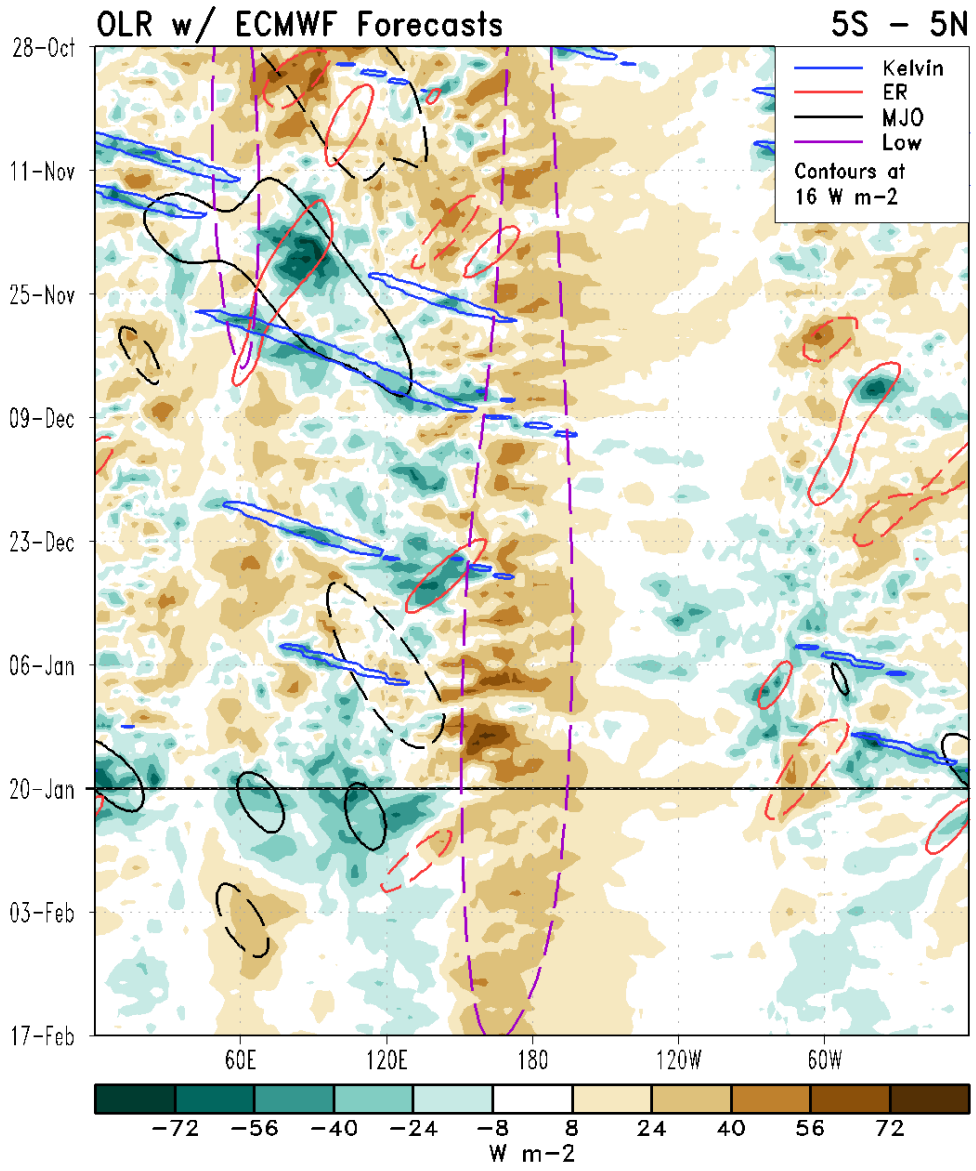


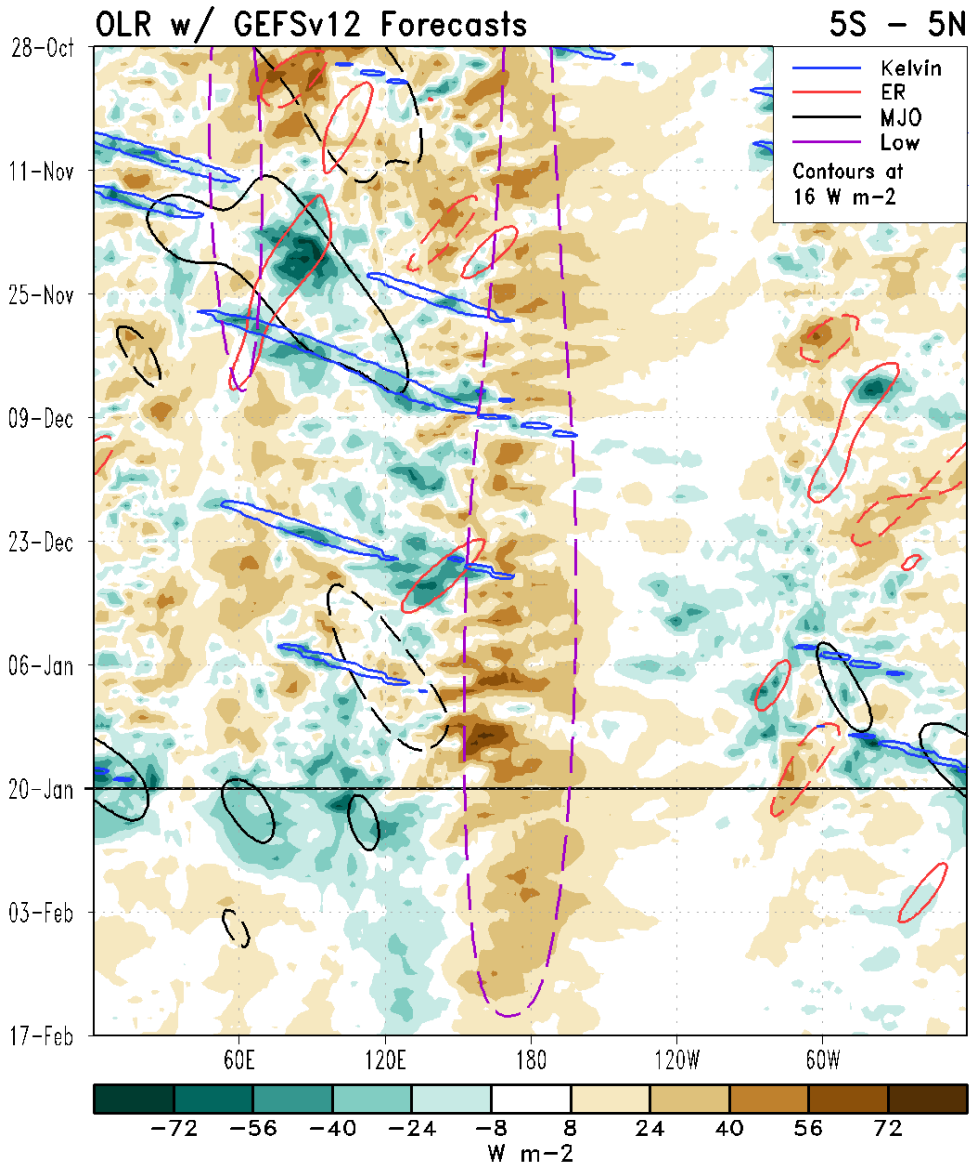




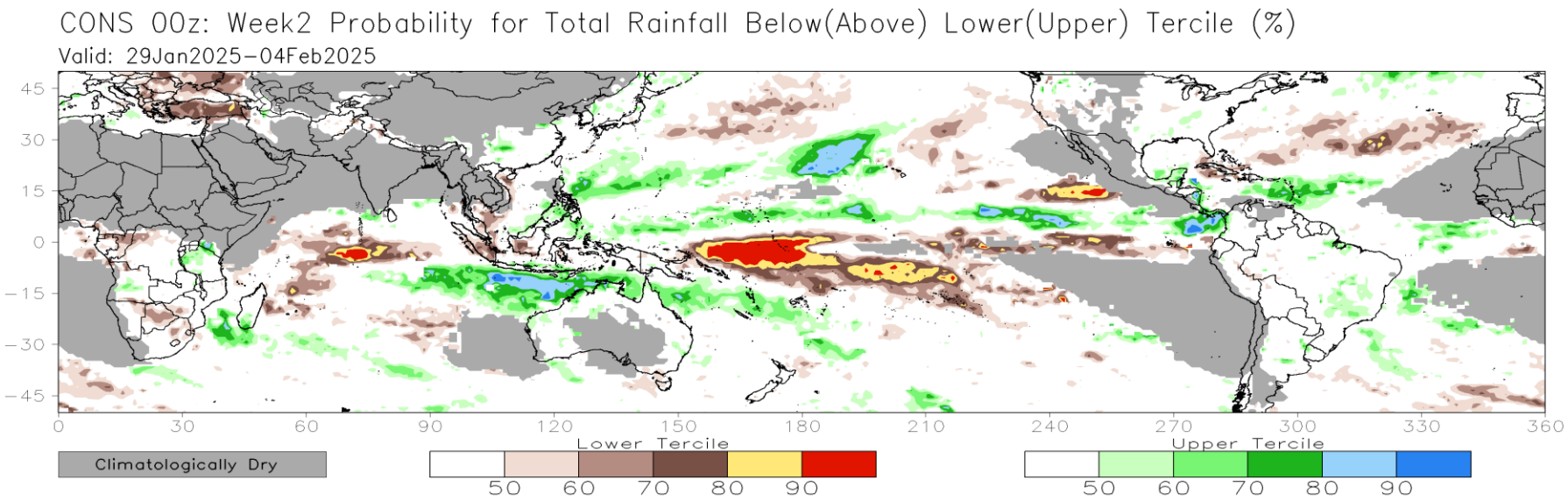
- Dynamical models are unanimous favoring a reduction of amplitude in the MJO as it propagates into the Maritime Continent, at odds with the potential for constructive interference with the La Nina base state.
- Both the GEFS and ECMWF also indicate a slowing of eastward propagation of the RMM signal after very quick movement over the last week or so. Ensemble member spread increases rapidly after week-1.

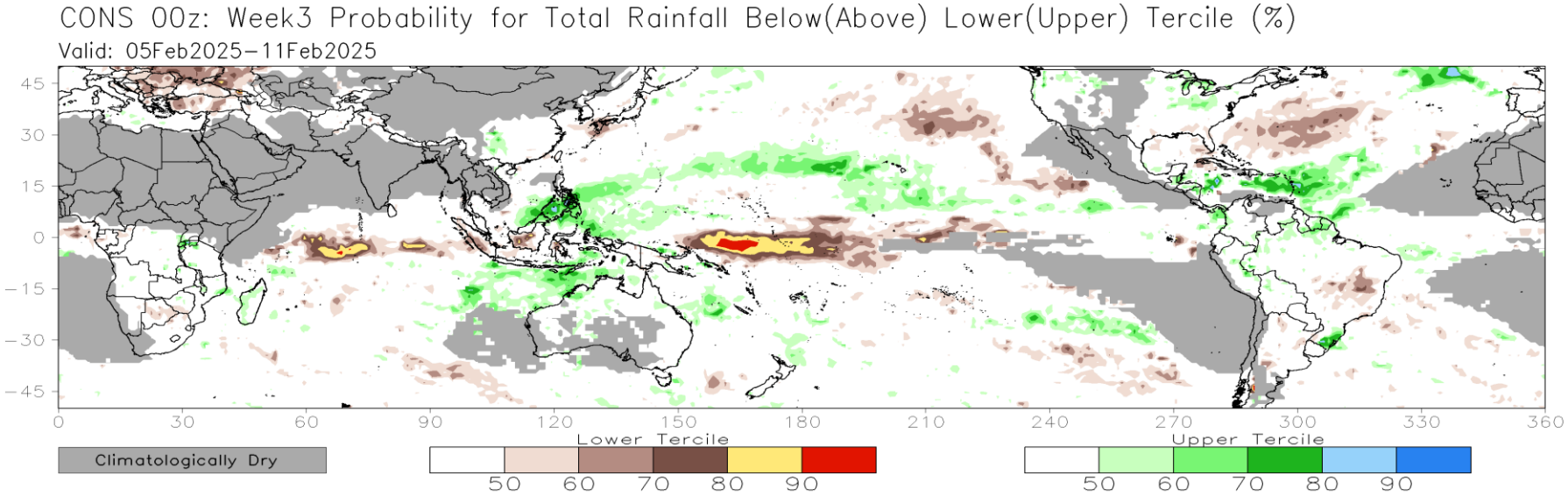
Outgoing Longwave Radiation (OLR) Anomaly Time/Lon Plots:



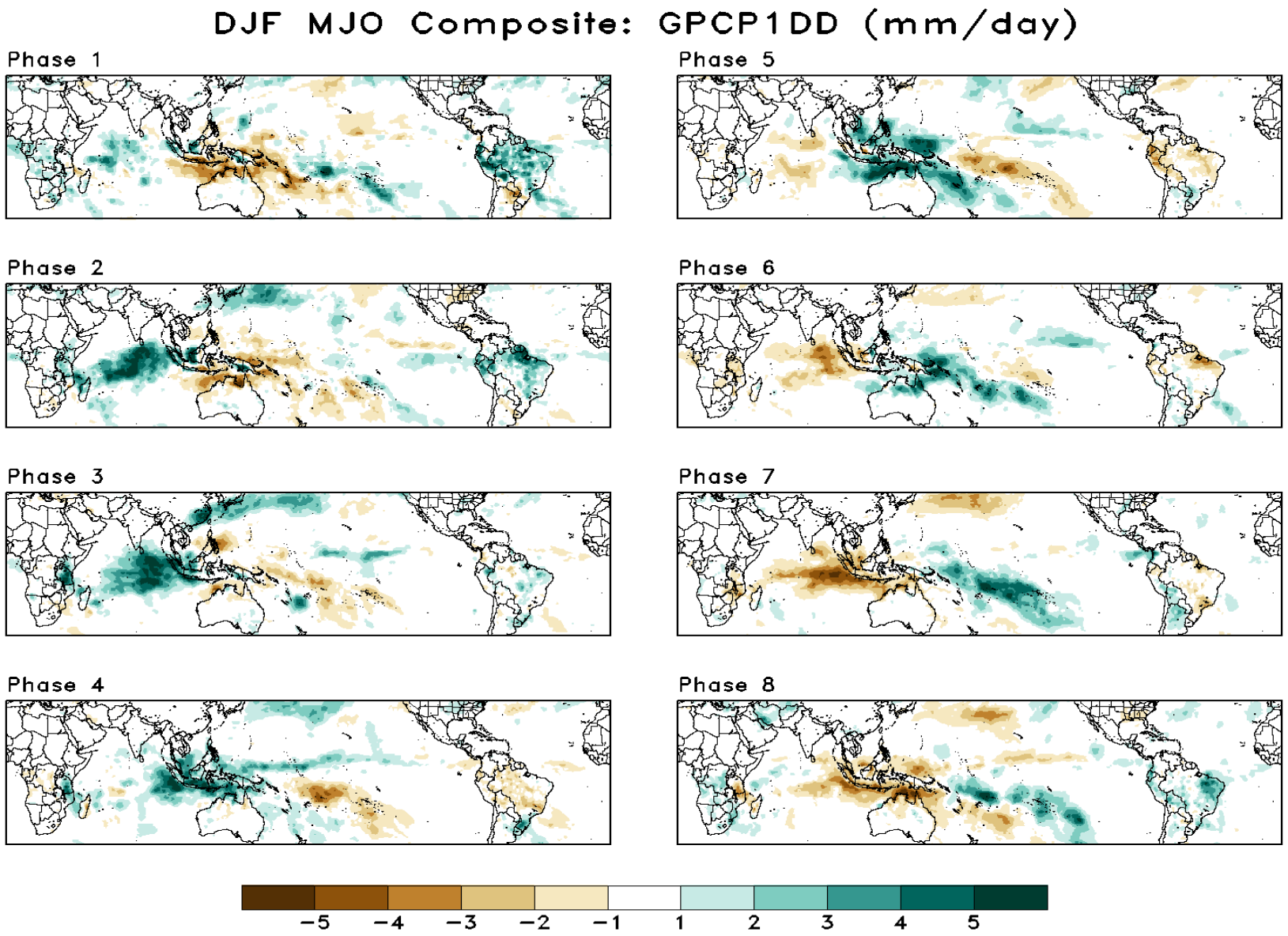


Consolidated Probabilistic Precipitation: Weeks 2 & 3

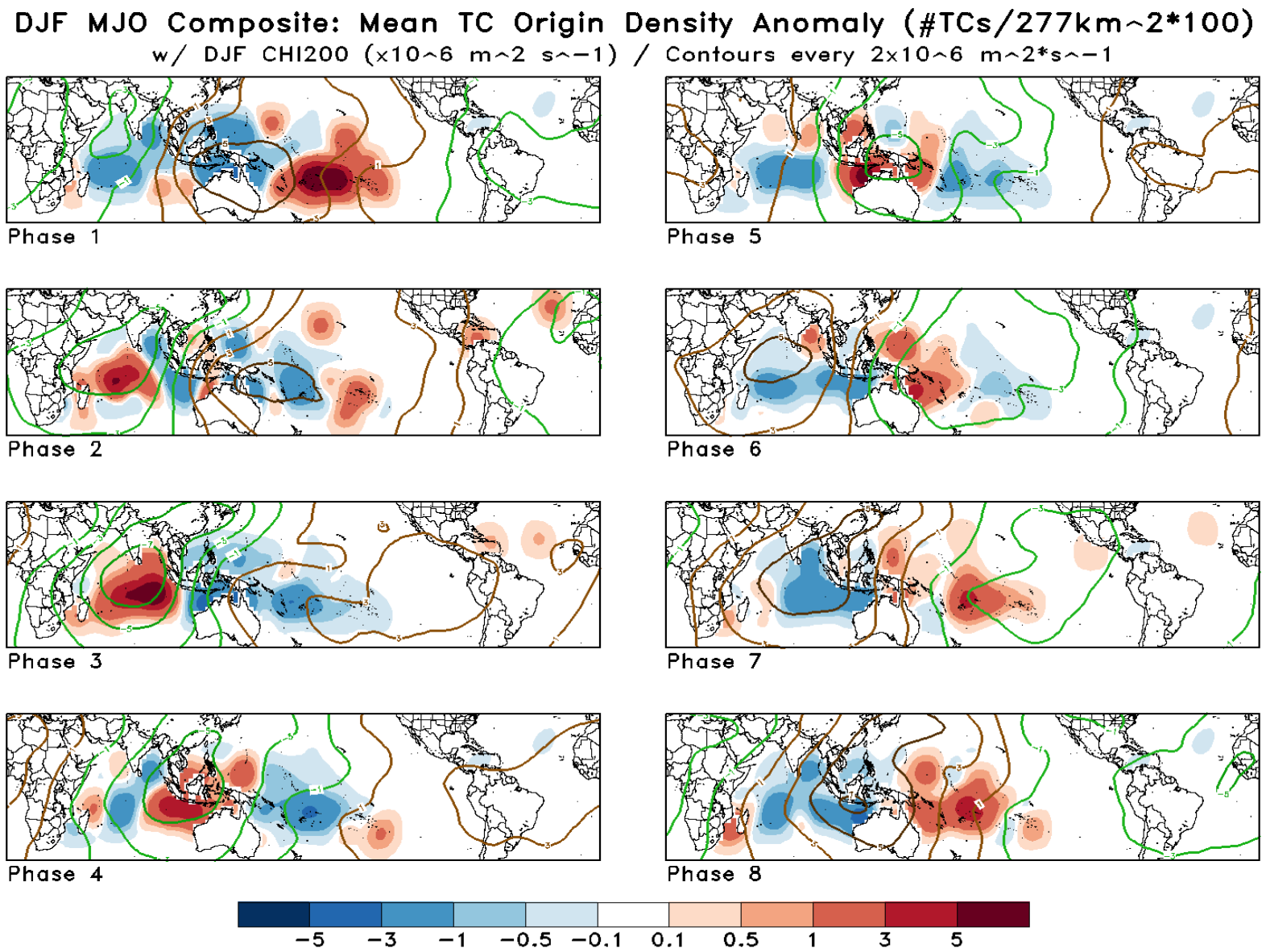


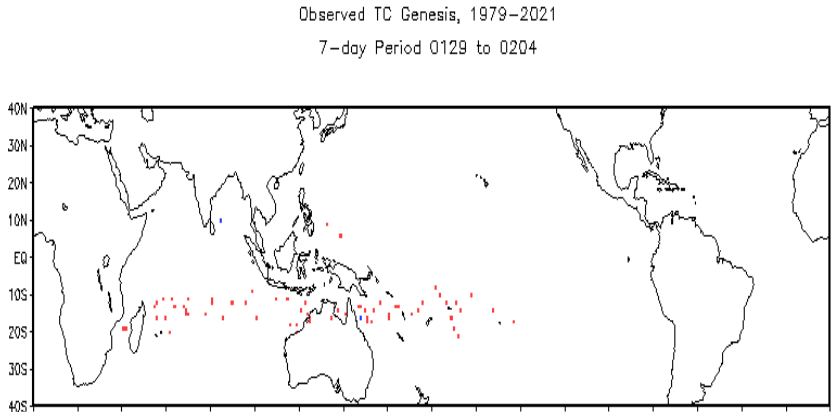


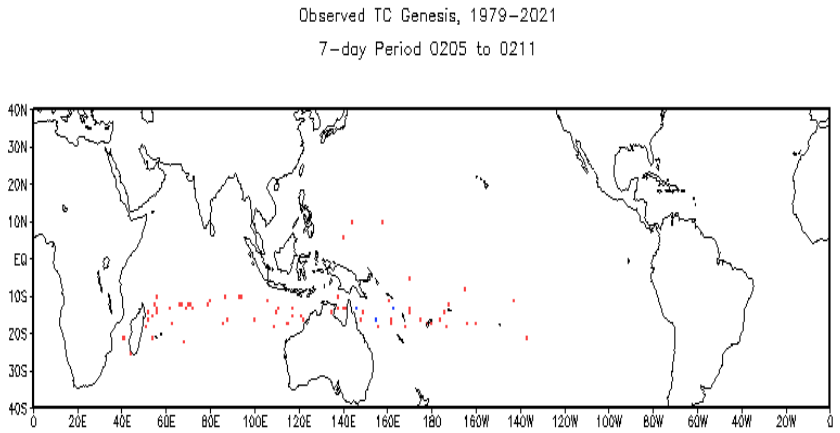
Historical Precipitation Anomalies By MJO Phase:



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

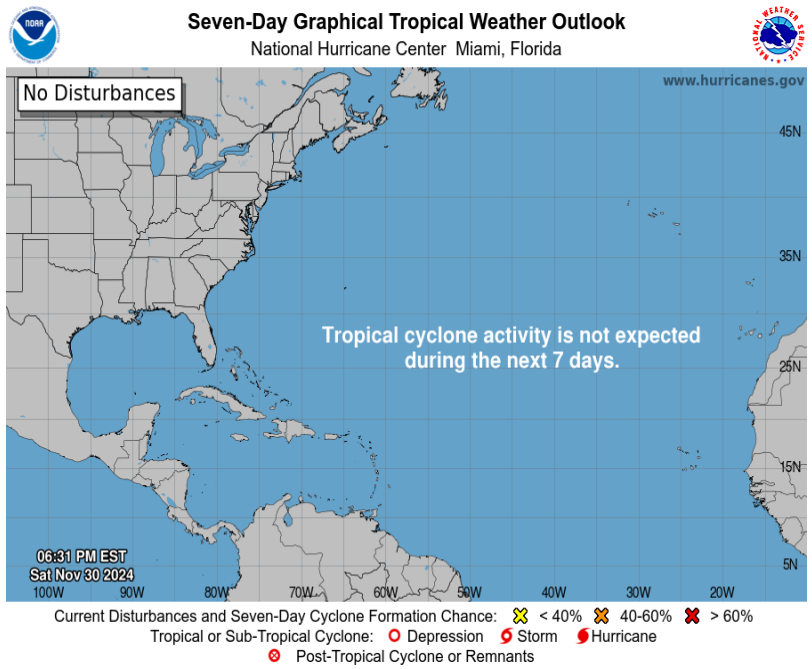




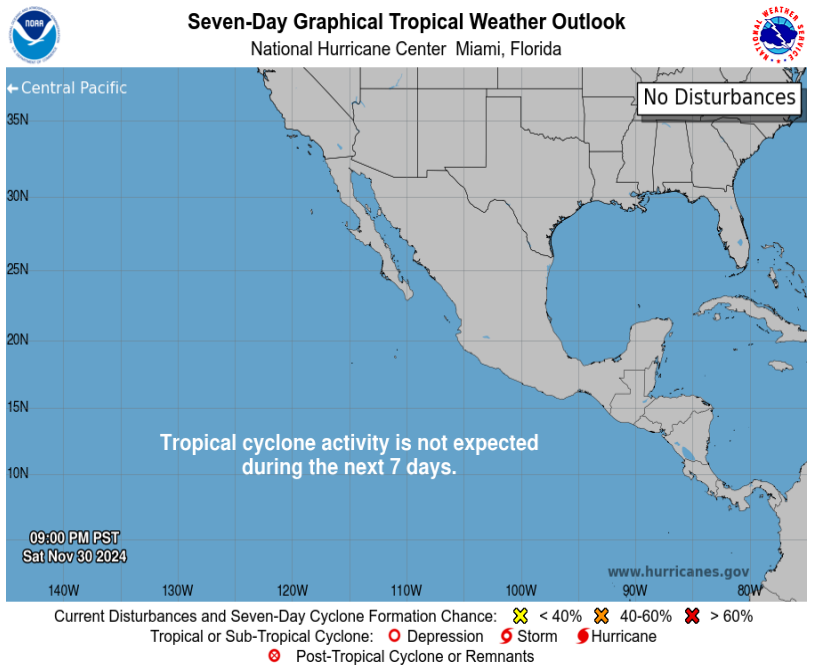


Experimental

Tropical Cyclone Monitoring/Forecast: NHC / CPHC



Current Disturbances and Seven-Day Cyclone Formation Chance: < 40% 40-60% > 60%
Tropical or Sub-Tropical Cyclone: Depression Storm Hurricane
Post-Tropical Cyclone or Remnants



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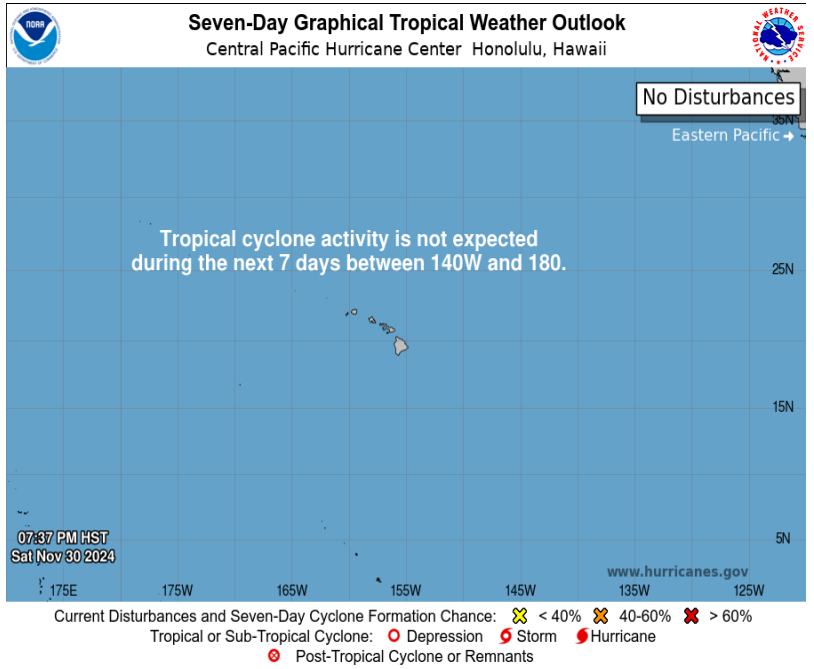

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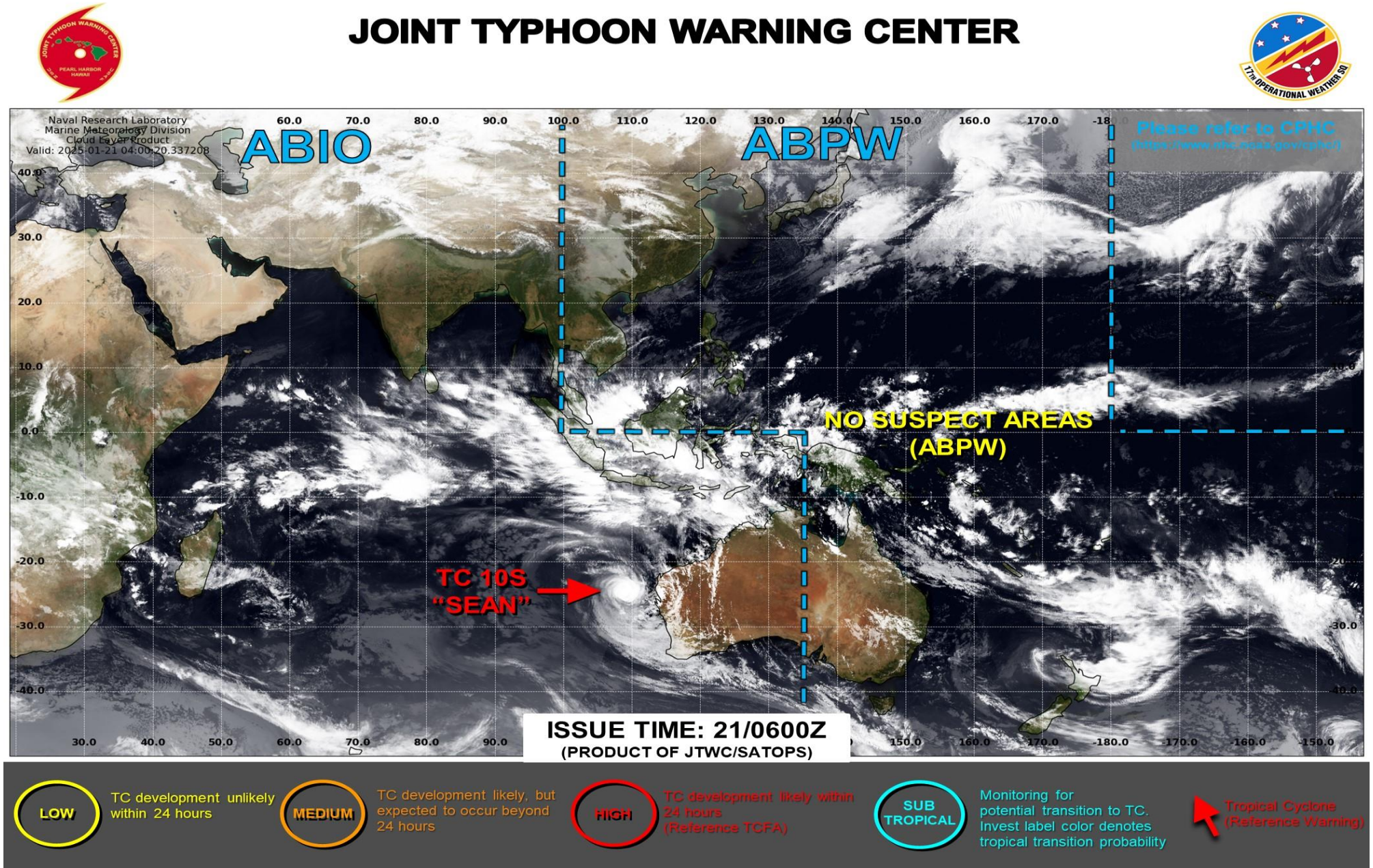
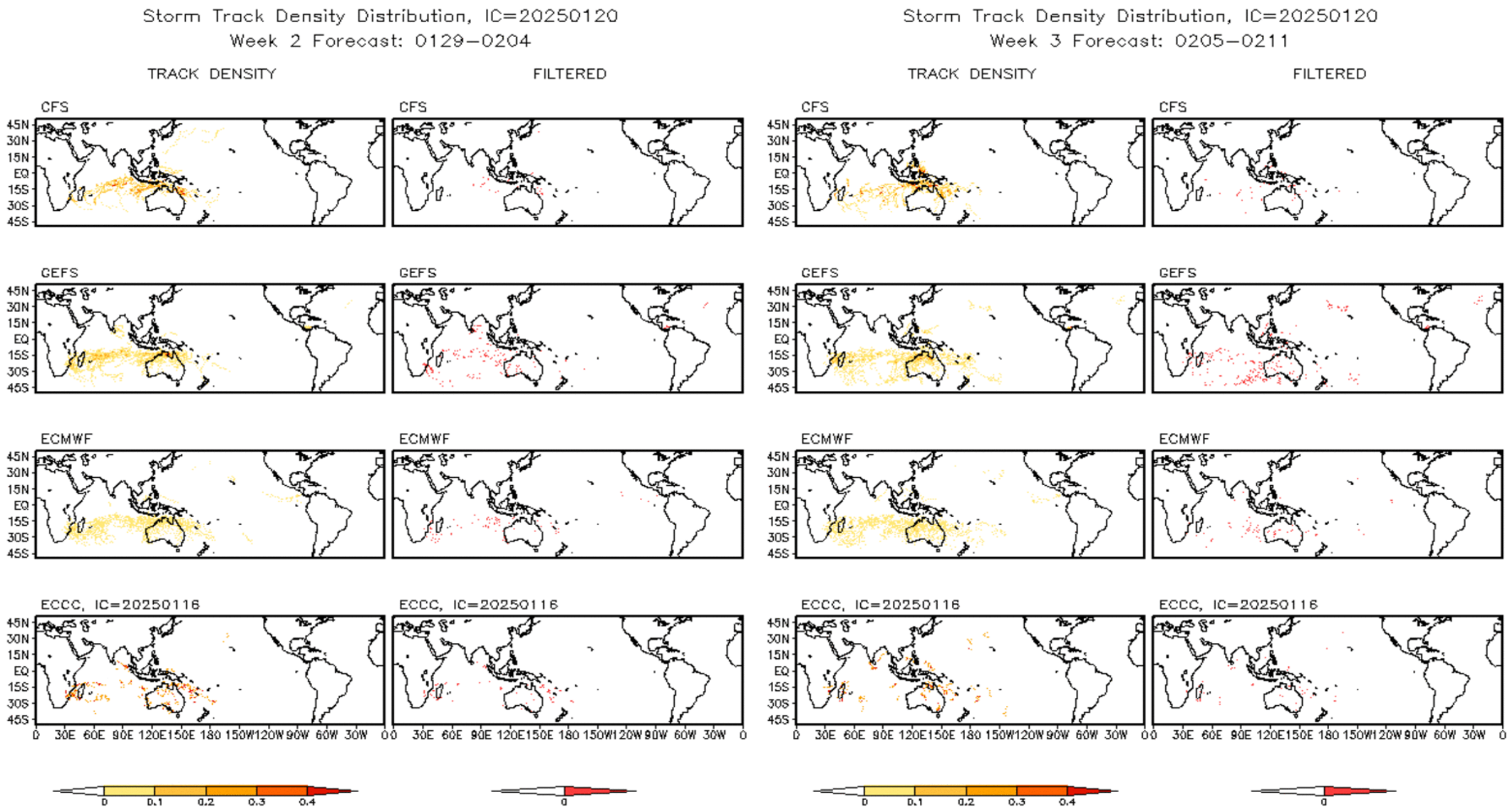
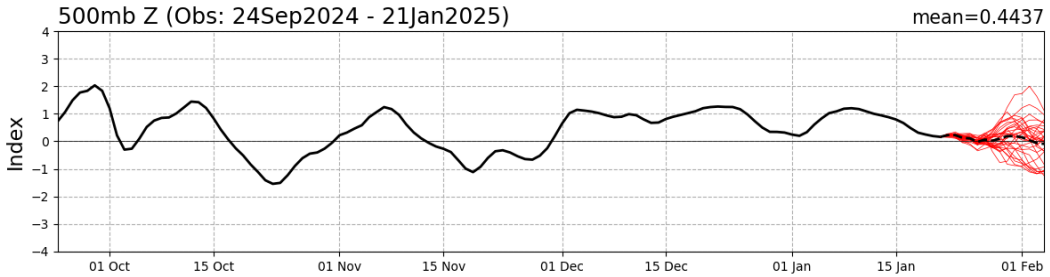


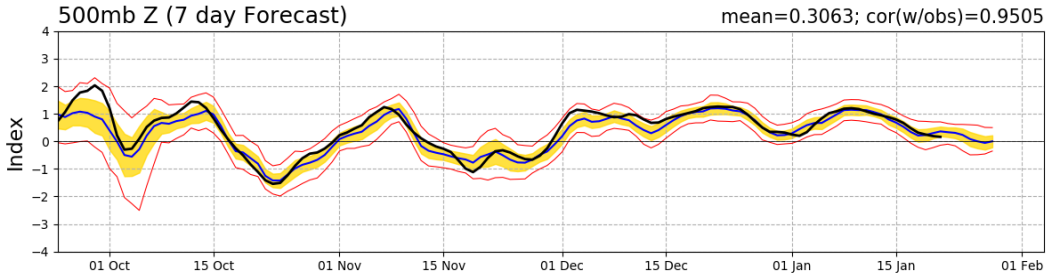
Multi-Model TC Track Densities: Weeks 2+3

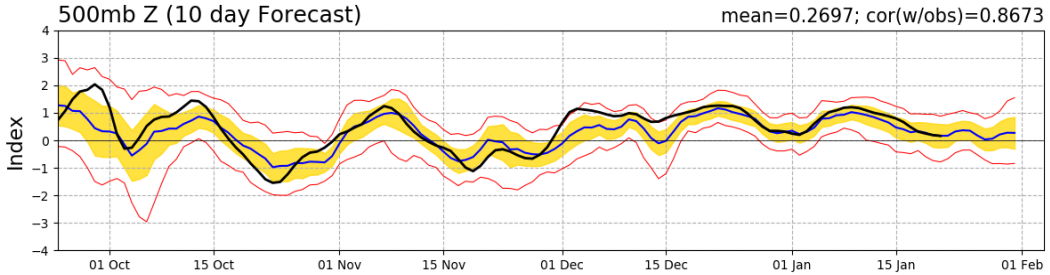


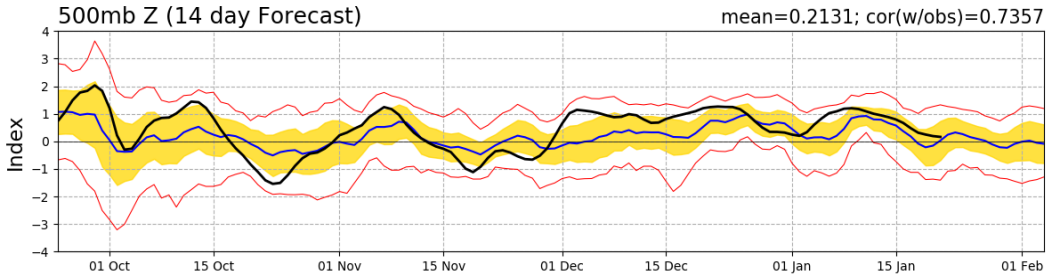
Teleconnection Indices: PNA / AO:

PNA Index: Observed & GEFS Forecasts

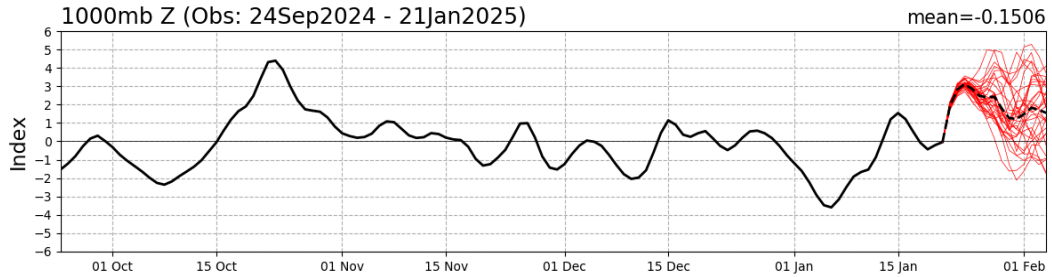


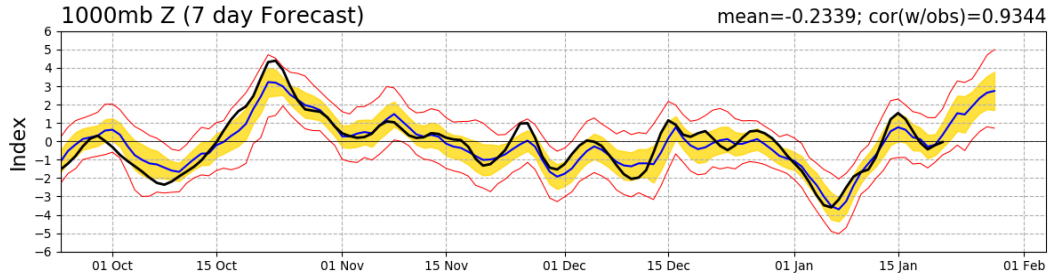


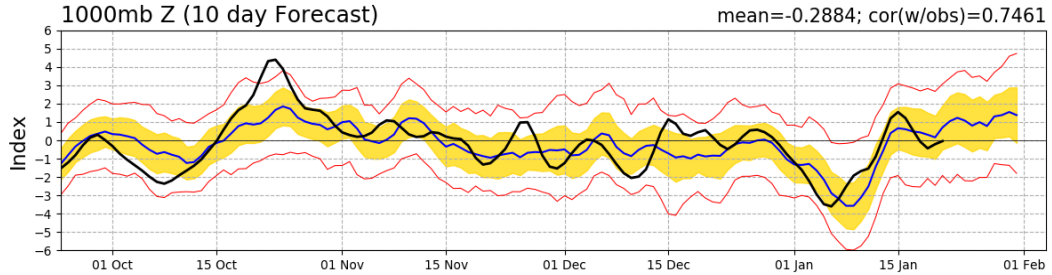


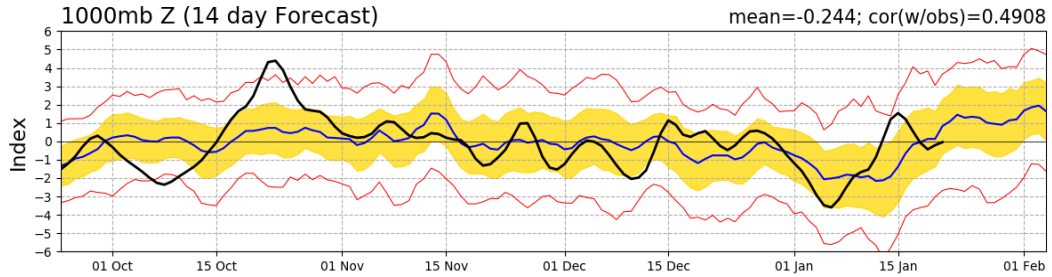


AO Index: Observed & GEFS Forecasts

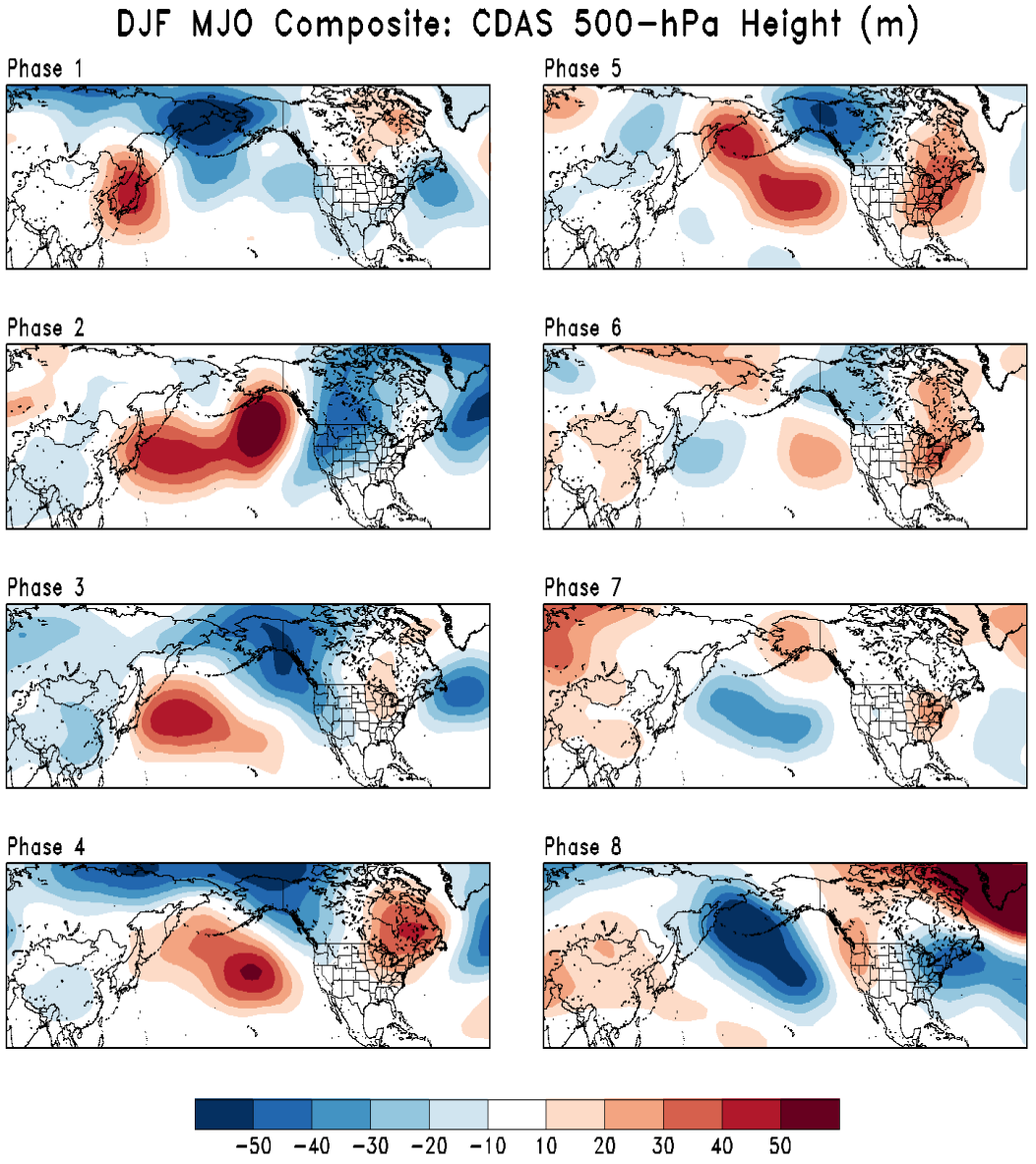


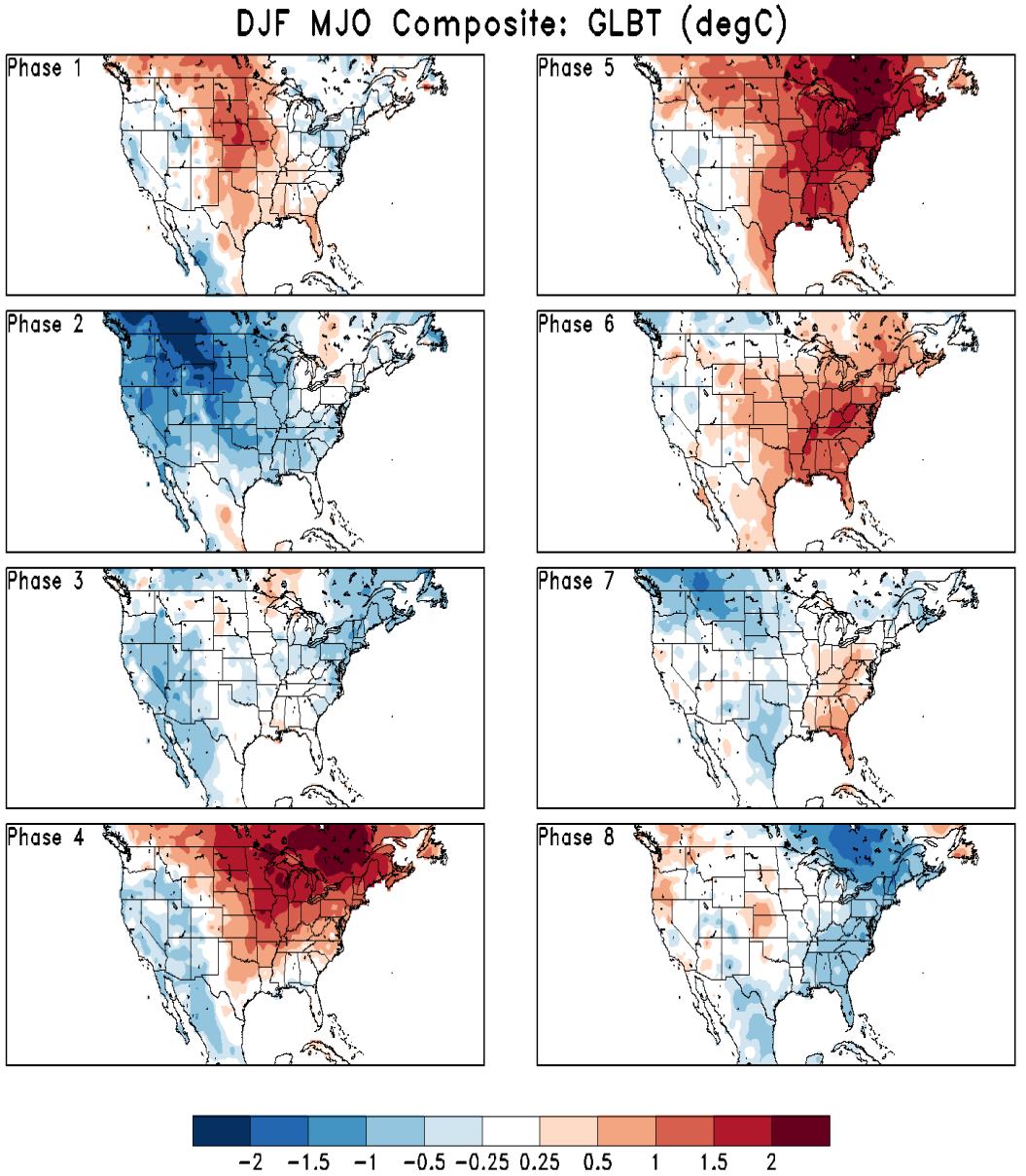




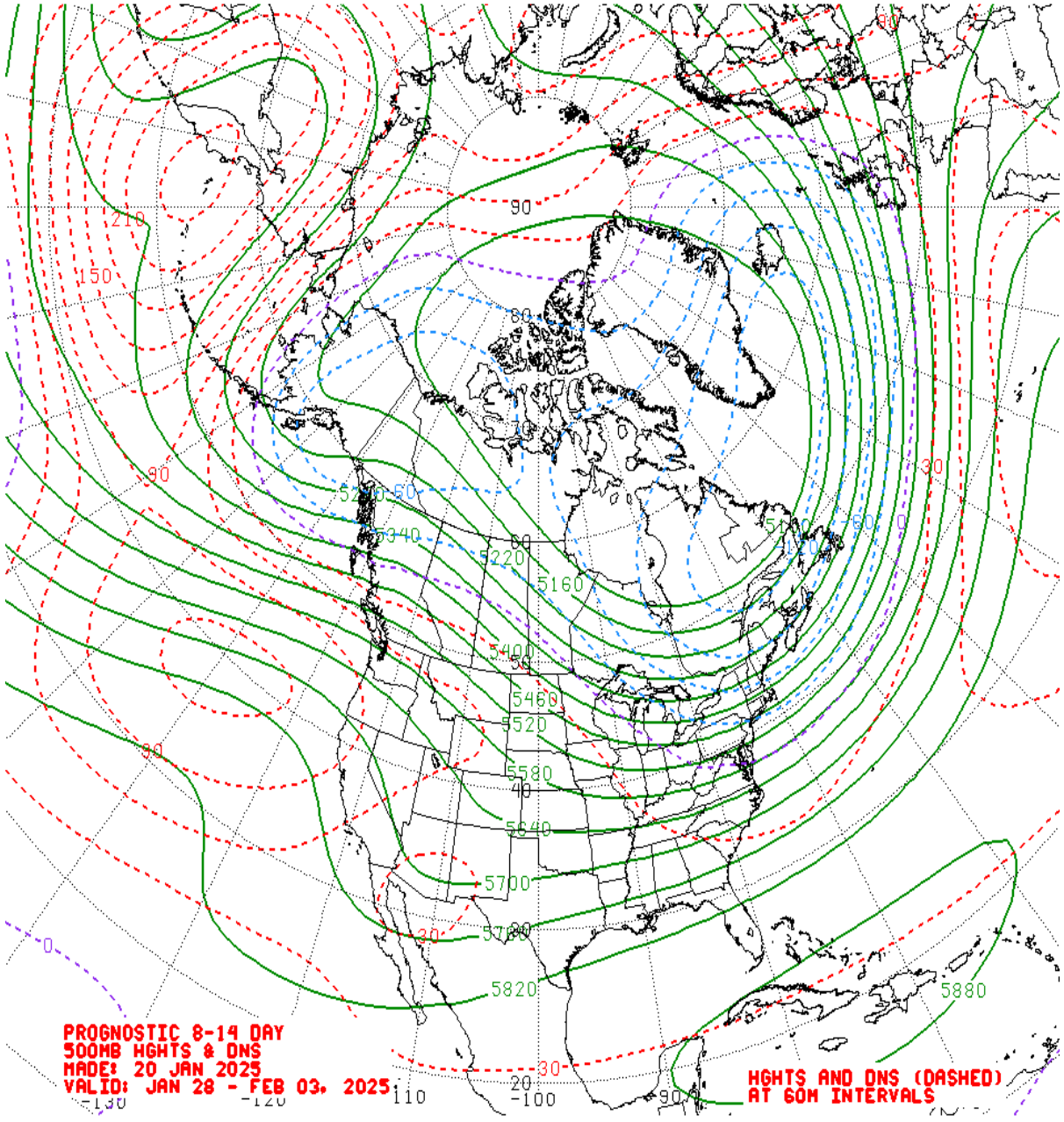


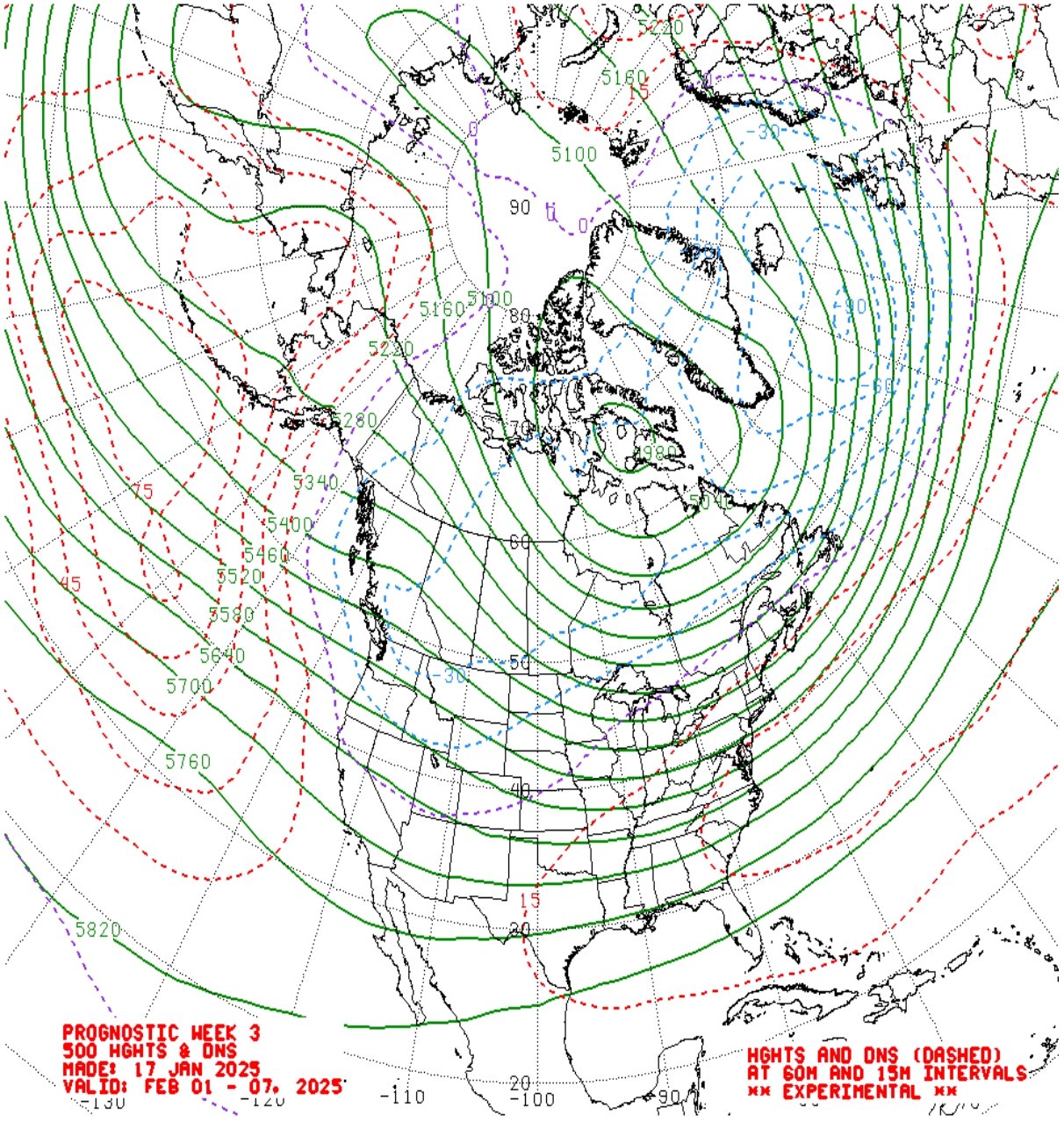
Historical 500-hPa Height & U.S. Temperatures By MJO Phase:



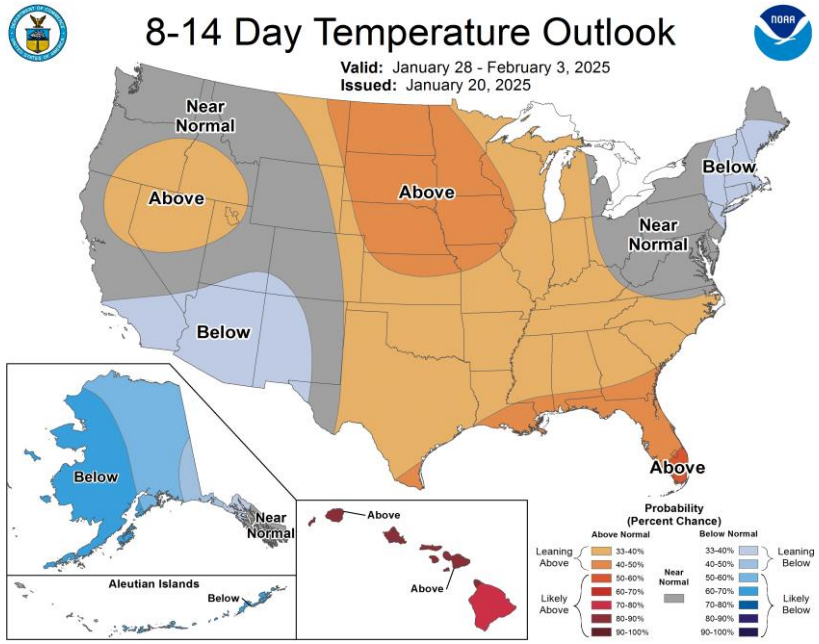


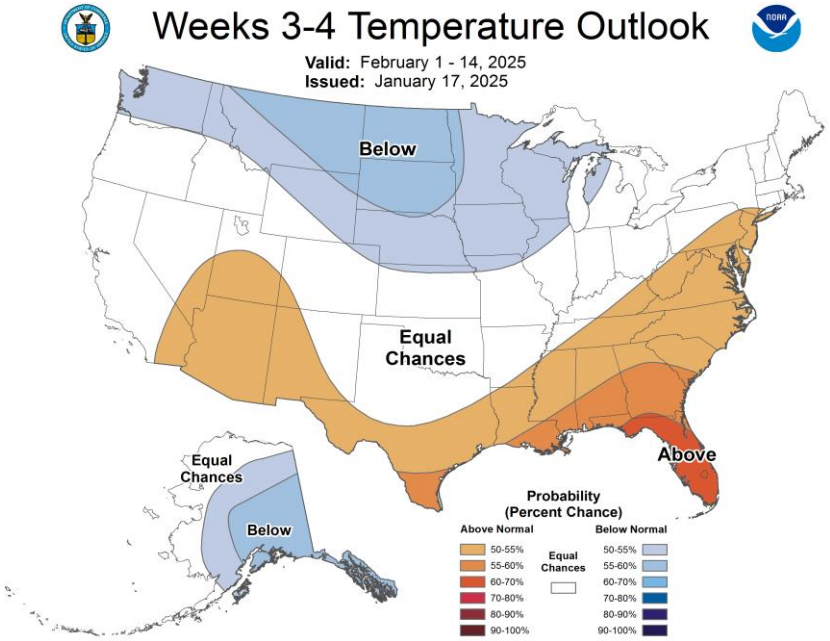
Mean 500-hPa Height Anomaly Forecasts: Weeks 2+3

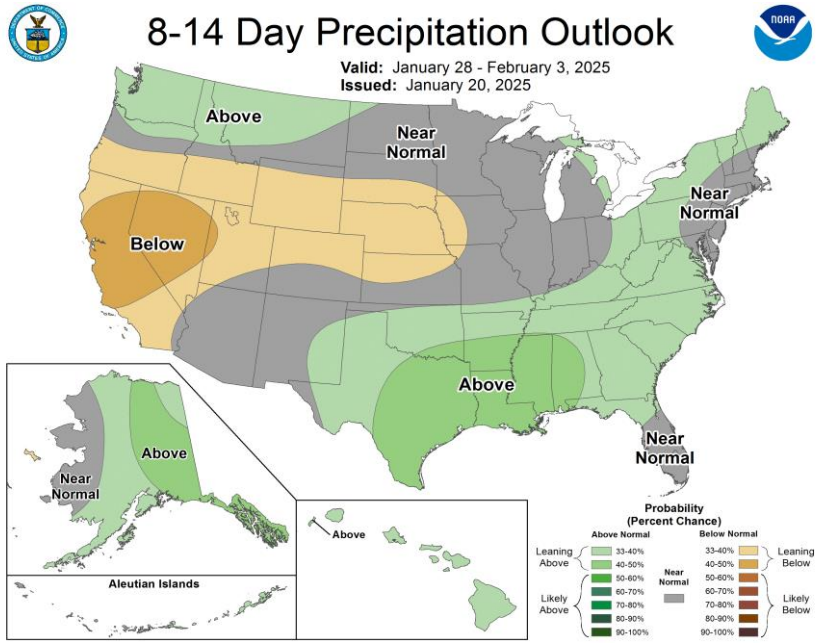


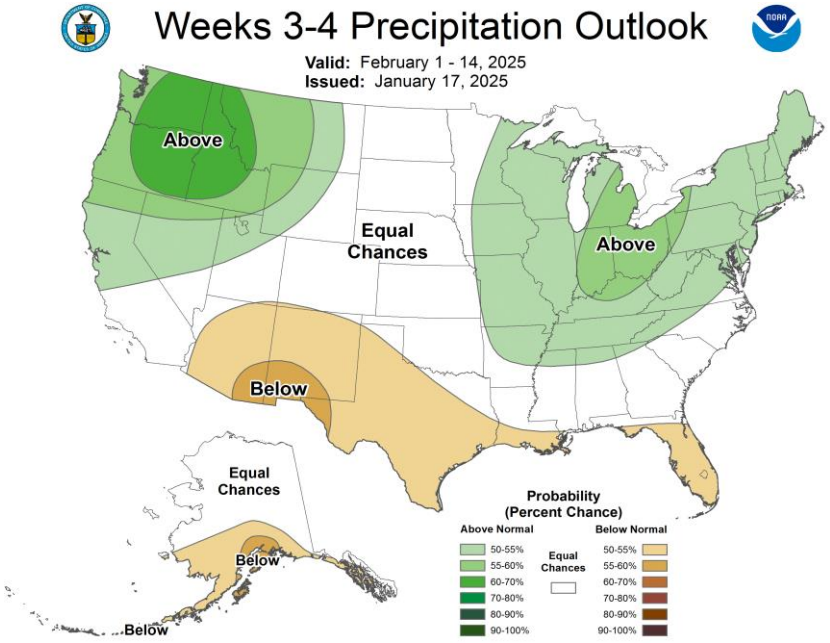


Official Temperature & Precipitation Forecasts:









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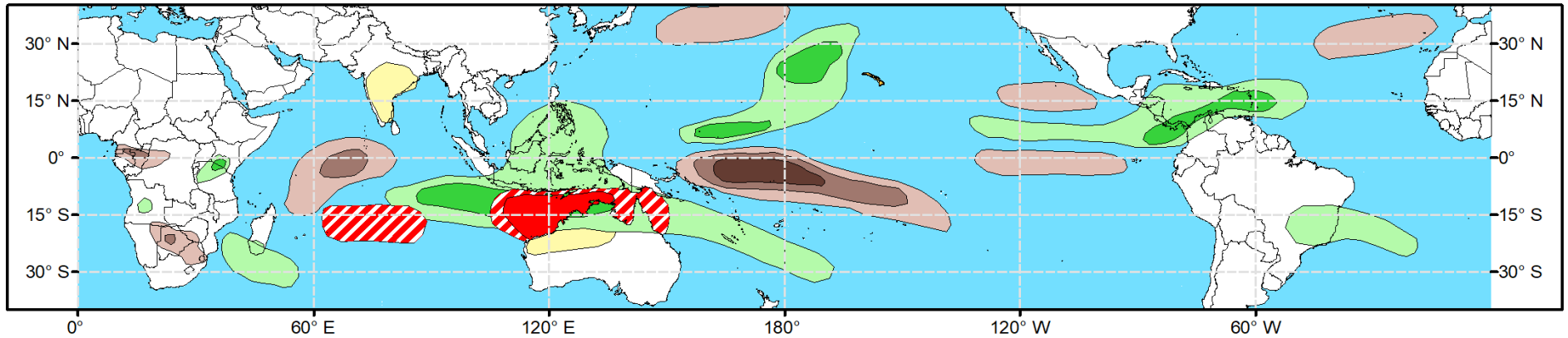

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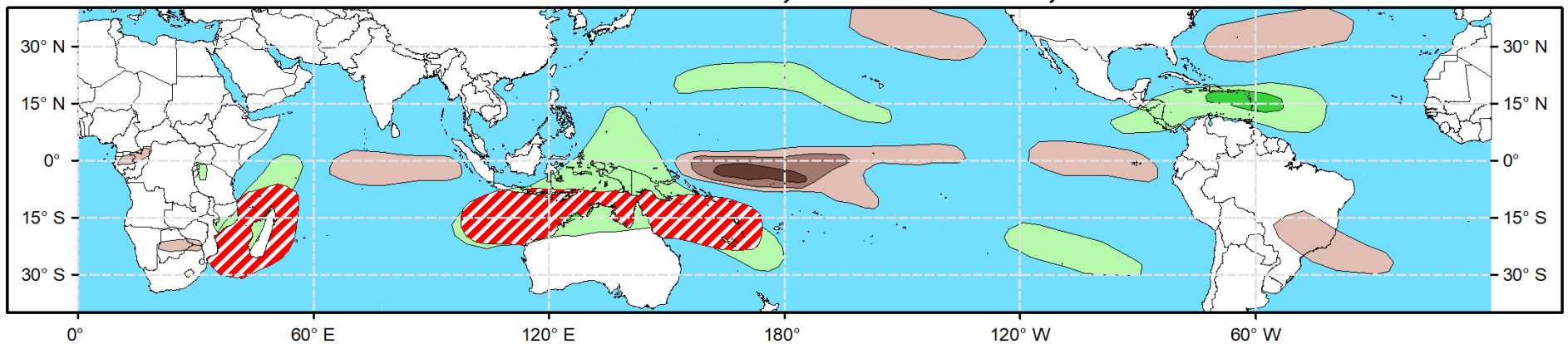

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