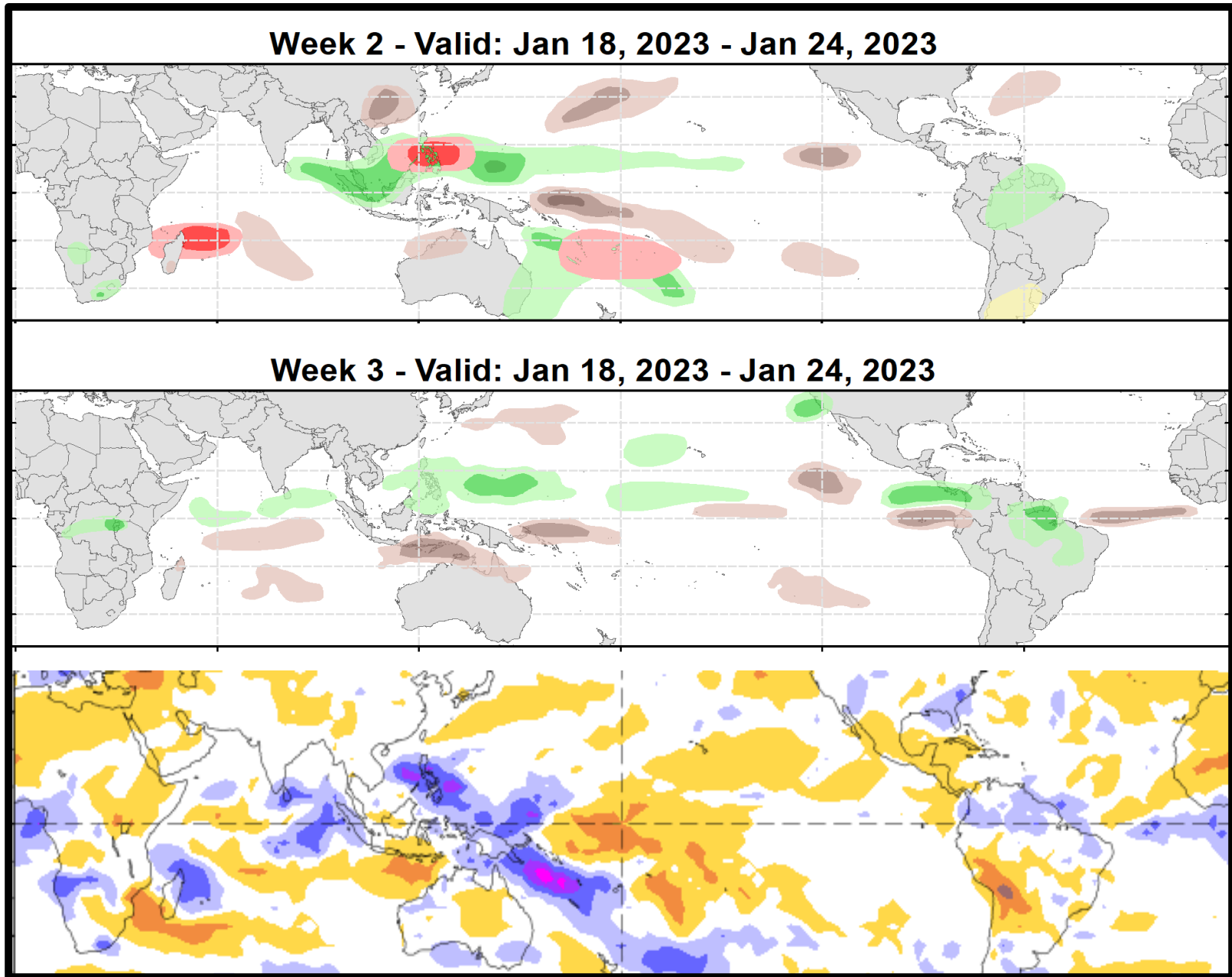
# Weeks 2-3 Global Tropics Hazards Outlook

1/24/2023

Adam Allgood
NWS / NCEP / Climate Prediction Center

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

- The evolving OLR pattern is broadly reflective of a resurging La Niña response.
- The disruption of the base state was a bit overdone in both the Week-3 and Week-2 outlooks, though there is notable improvement in the Week-2 outlook.



# Synopsis of Climate Modes:

## ENSO: (Jan 12, 2023 Update) *next update on Thursday, Feb 9th*

- ENSO Alert System Status: La Niña Advisory

- A transition from La Niña to ENSO-neutral is anticipated during the February-April 2023 season. By Northern Hemisphere spring (March-May 2023), the chance for ENSO-neutral is 82%.

## MJO and other subseasonal tropical variability:

- Following a fairly weak progression across the Western Hemisphere, the amplitude of the MJO signal has increased markedly over the past few days. This is consistent with last week's MJO index forecasts.

- Dynamical model MJO index forecasts favor continued activity, with a stationary pattern over the Indian Ocean during Week-1, followed by eastward propagation across the Maritime Continent during Week-2, and over the West Pacific by Week-3. Some ensemble members depict a very strong West Pacific event.

- The MJO will likely constructively interfere with the ongoing La Niña during Weeks 1 and 2, but will destructivey interfere with the base state during Week-3.

- Given the extent of the West Pacific Warm Pool, if the MJO succeeds in generating a westerly wind burst along the equatorial West Pacific, a strong downwelling oceanic Kelvin wave could be initiated and weaken the La Niña.
- The MJO teleconnects well into the northern hemisphere midlatitude pattern, favoring a potential transition towards warmer conditions across eastern North America by Week-3.

# GTH Outlook:

## Global Tropics Hazards Outlook

Climate Prediction Center

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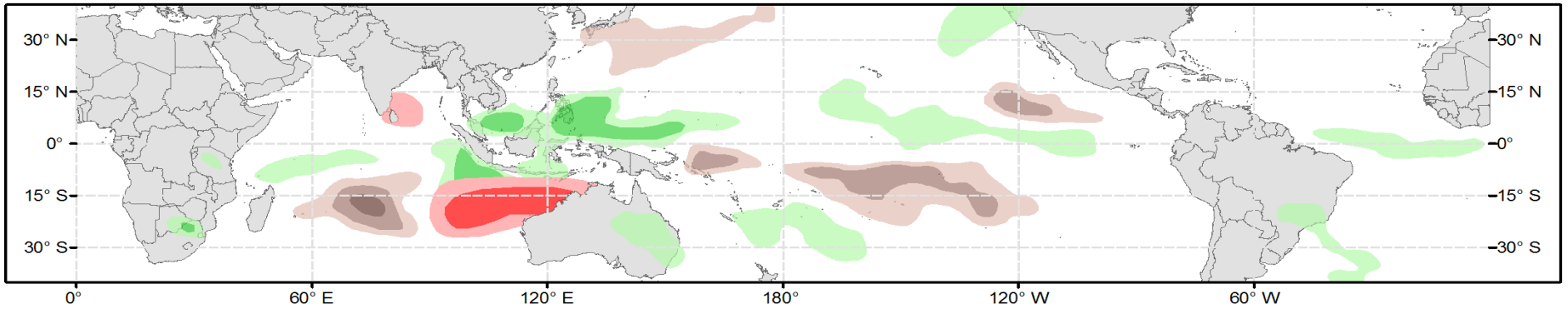
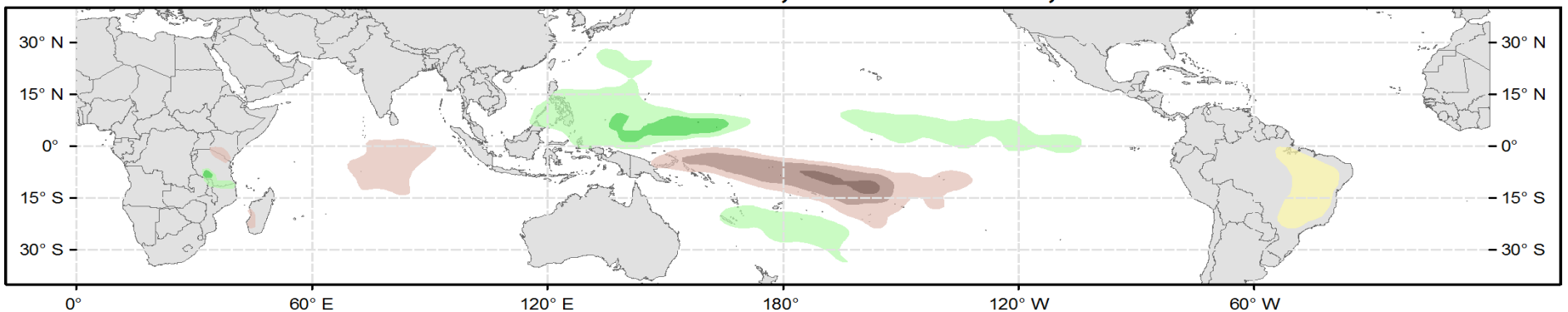



### Week 3 - Valid: Feb 08, 2023 - Feb 14, 2023




**Week-2 Only**
**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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**Above-Average Temperatures Probability**
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*7-day mean temperatures in the Upper third of the historical range*

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**Forecaster: Allgood**

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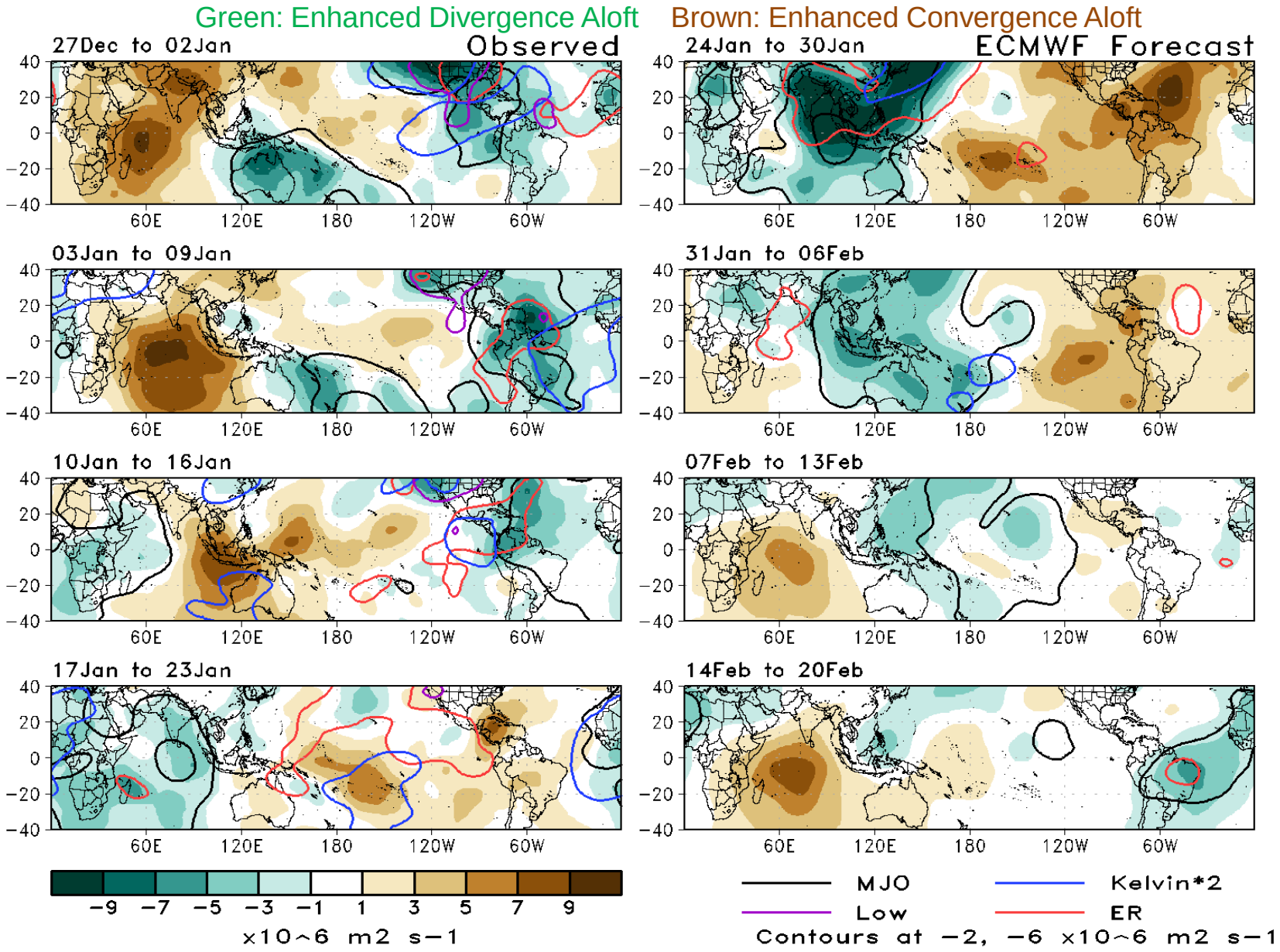
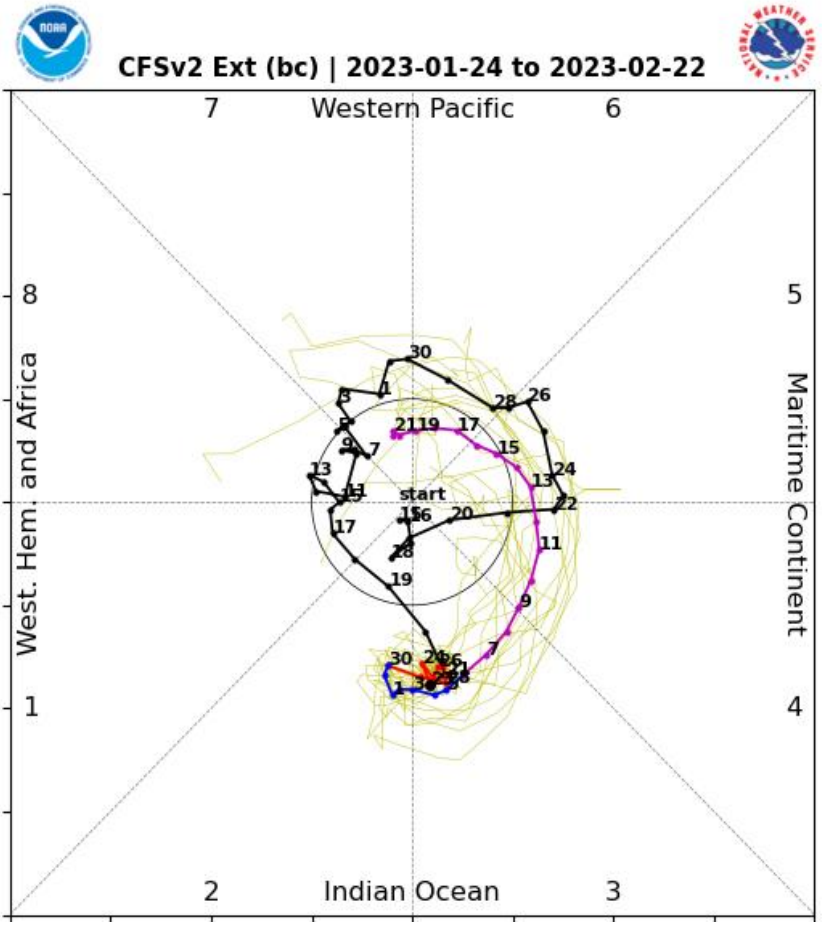
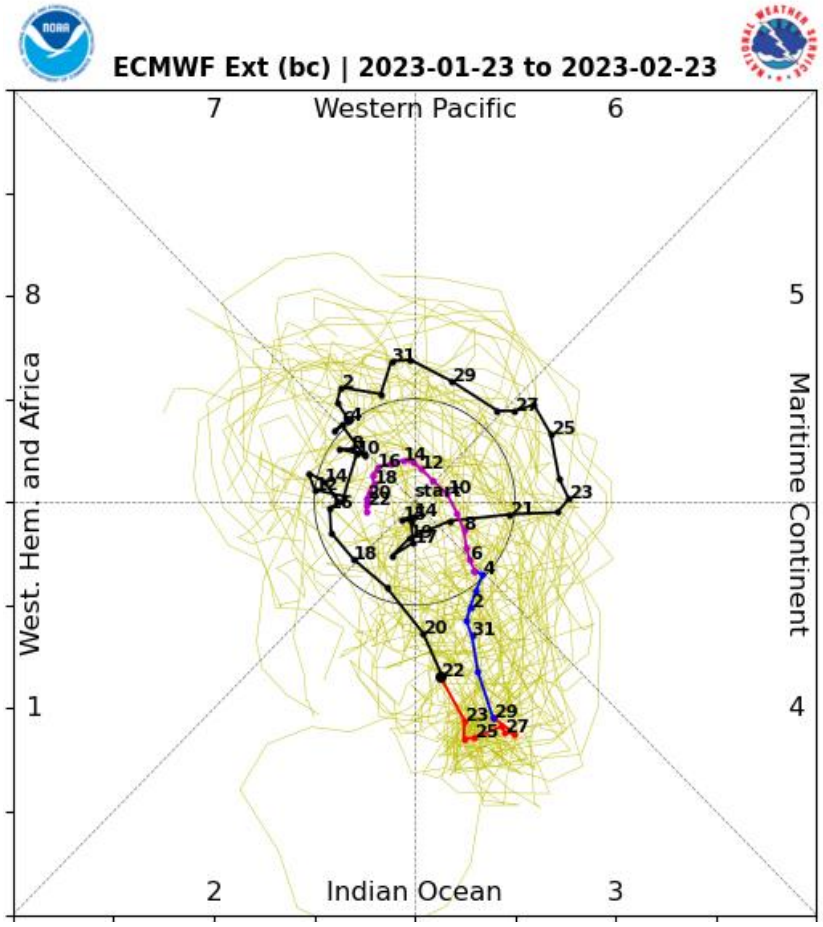
# 200-hPa Velocity Potential Anomaly Maps:

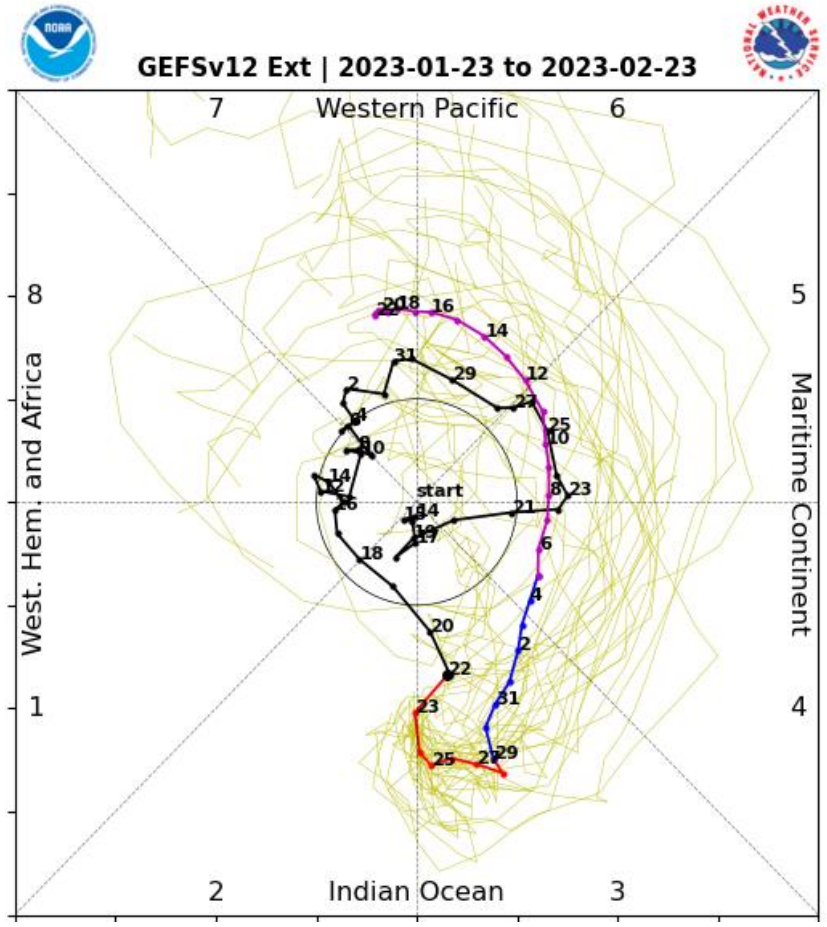
- Destructive interference between the MJO and La Niña during late December and early January resulted in an increasingly incoherent pattern, with most of the MJO impacts occurring across the SPCZ region.
- The ECMWF forecast is indicative of an active MJO progressing to the Pacific, with a stronger footprint than the previous event.



# RMM Index Observations & Forecasts:

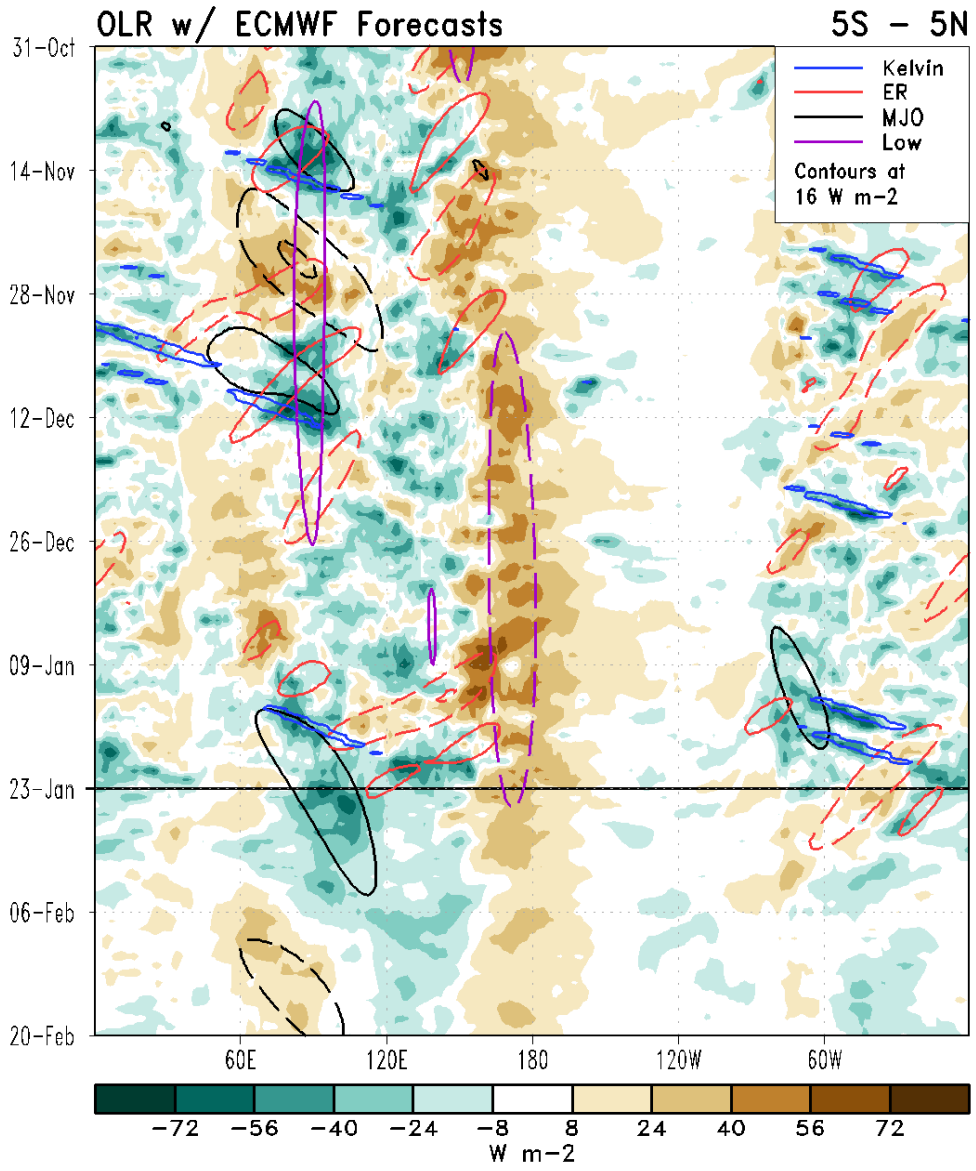


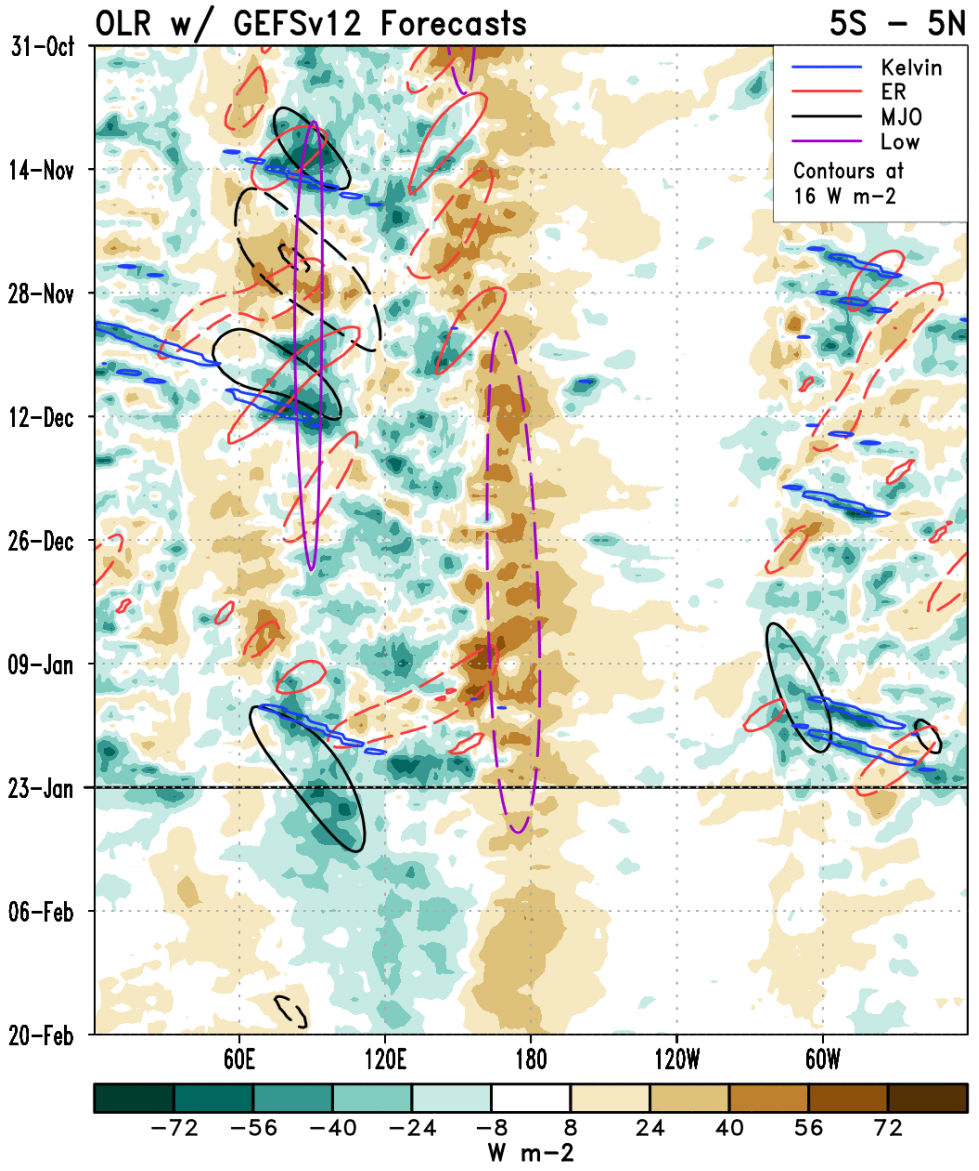




- All of the dynamical model MJO index forecasts depict eastward propagation resuming in Week-2.
- The GEFS depicts a strong MJO event, while the ECMWF is notably weaker.
- The 120-day period mean is removed from the RMM index analyses, which in a La Niña regime would displace the progression away from Phases 4 and 5. This may be impacting the ECMWF outlook.

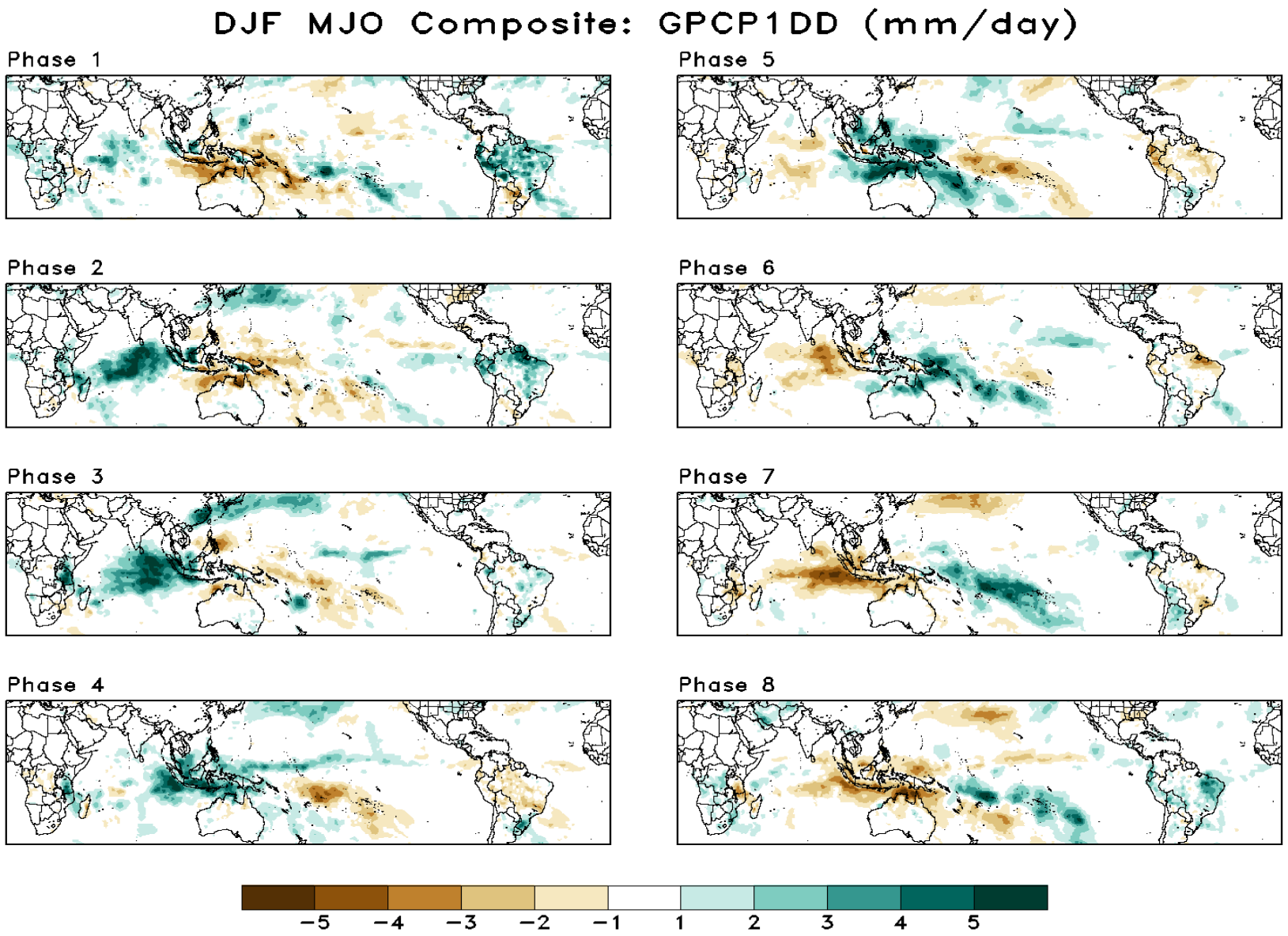
# Outgoing Longwave Radiation (OLR) Anomaly Time/Lon Plots:



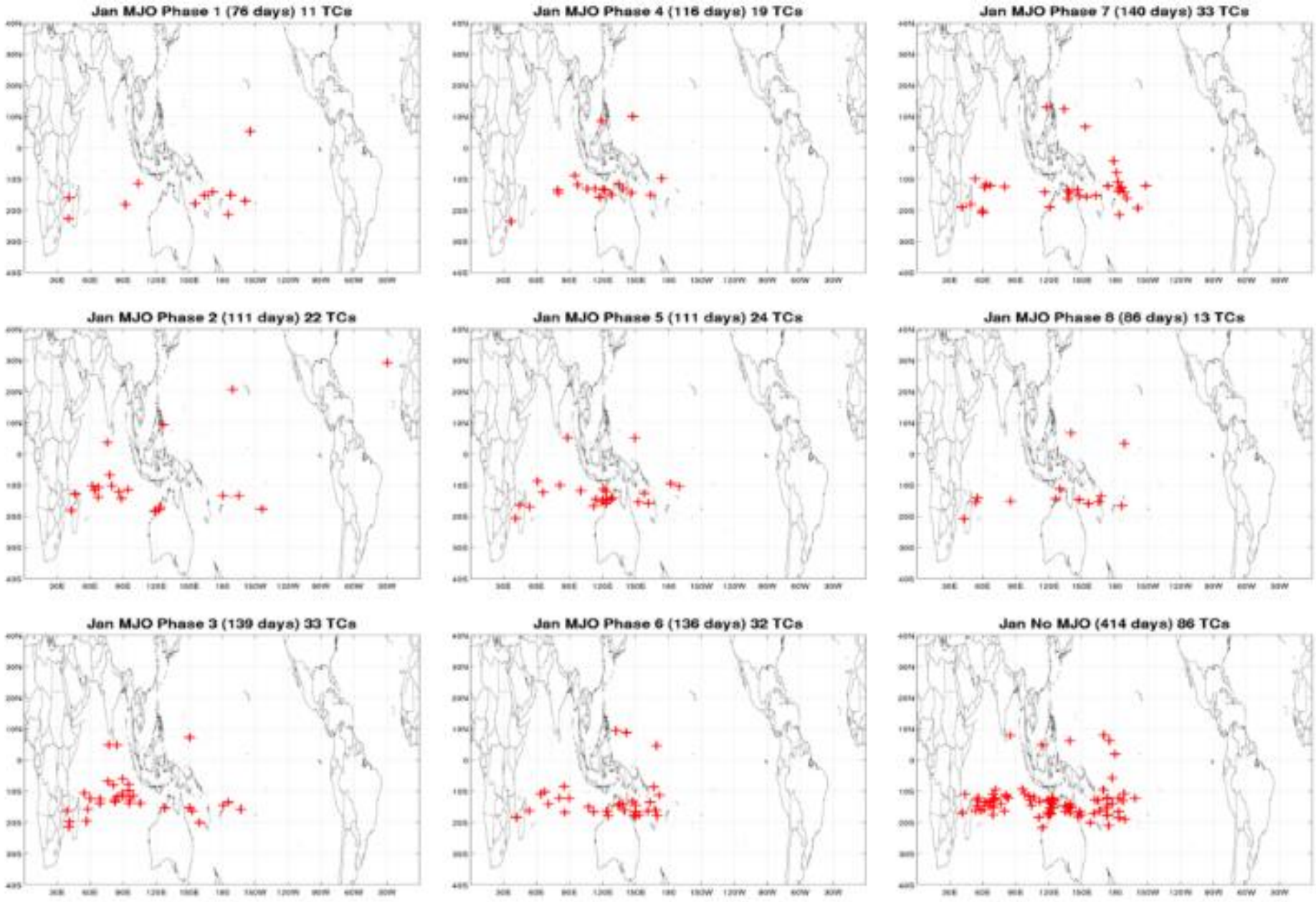




Neither the GEFS or ECMWF show enhanced rainfall breaking down the La Niña response near the Equator.

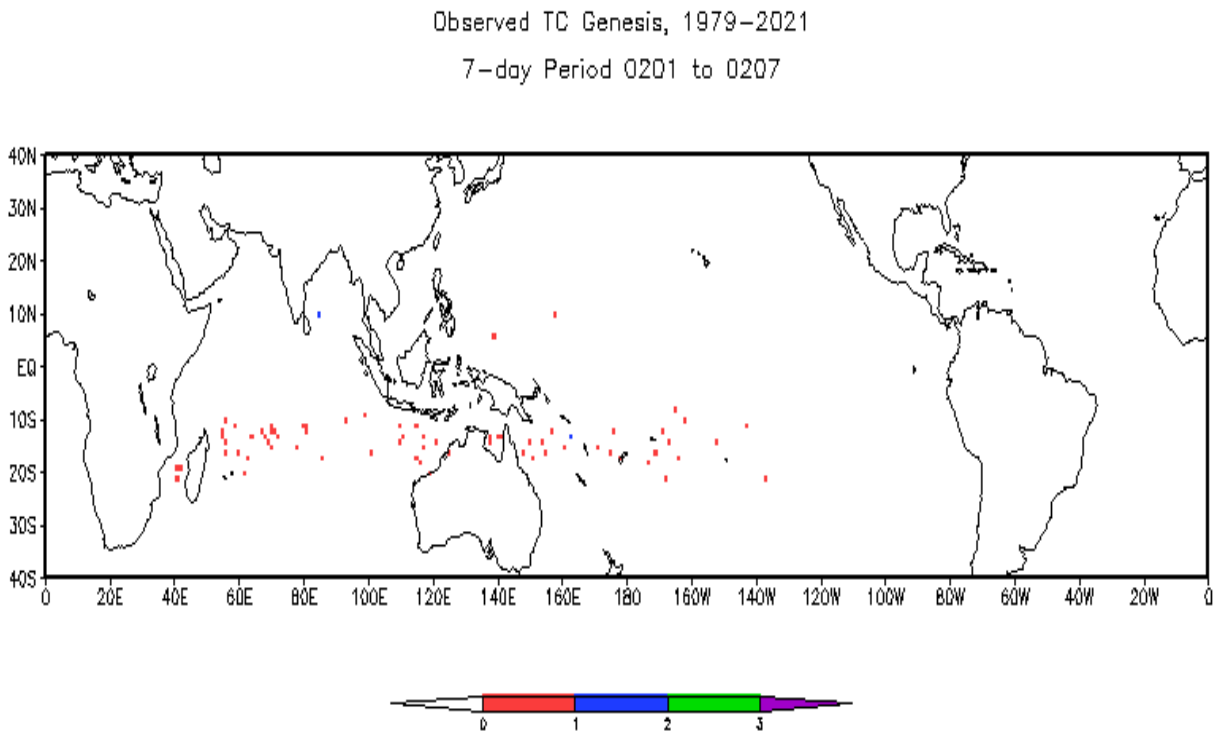
# Historical Precipitation Anomalies By MJO Phase:

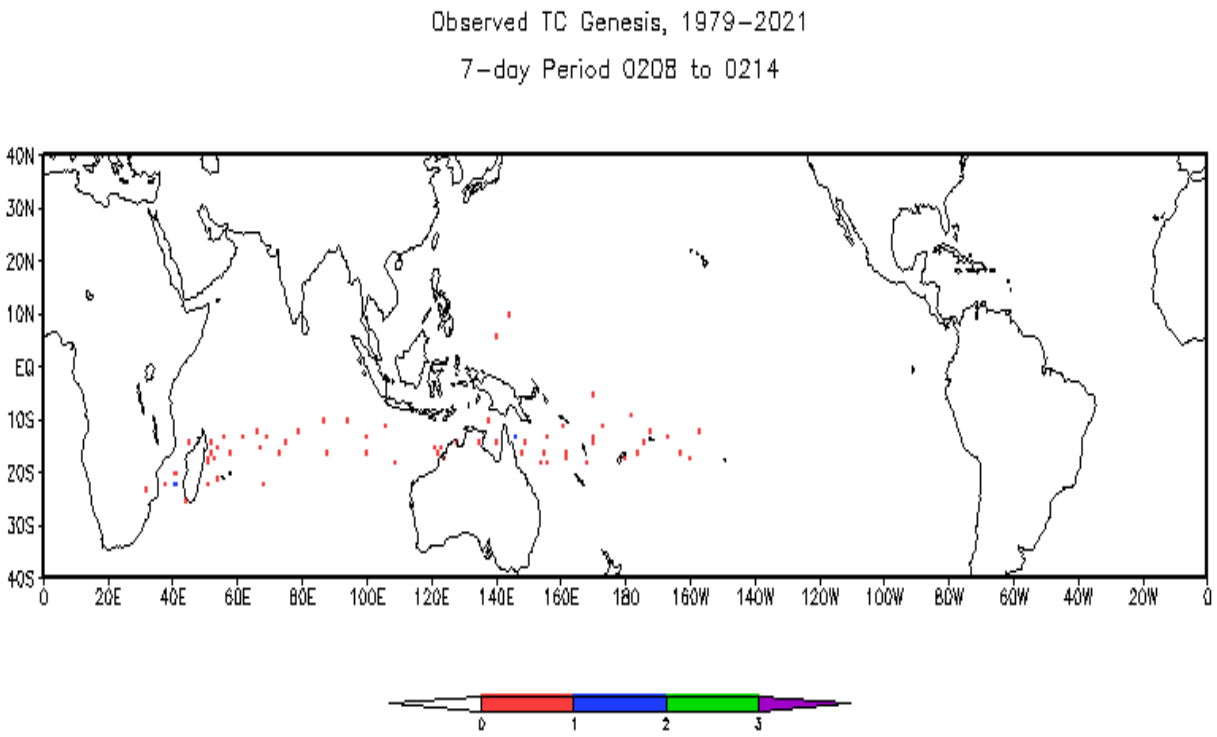


# Historical TC Genesis Origins By MJO Phase:

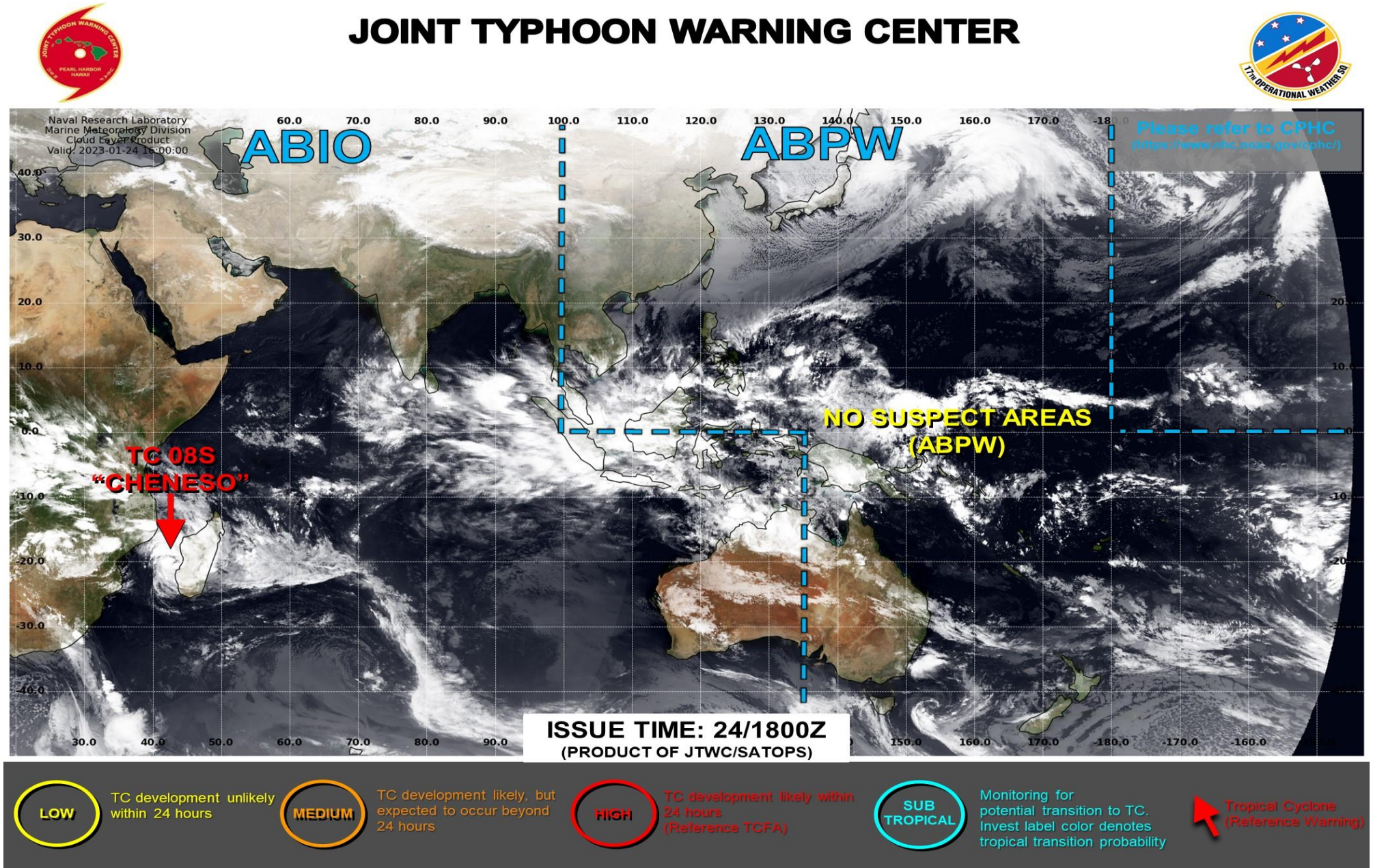


# TC Climatological Genesis: Weeks 2 & 3

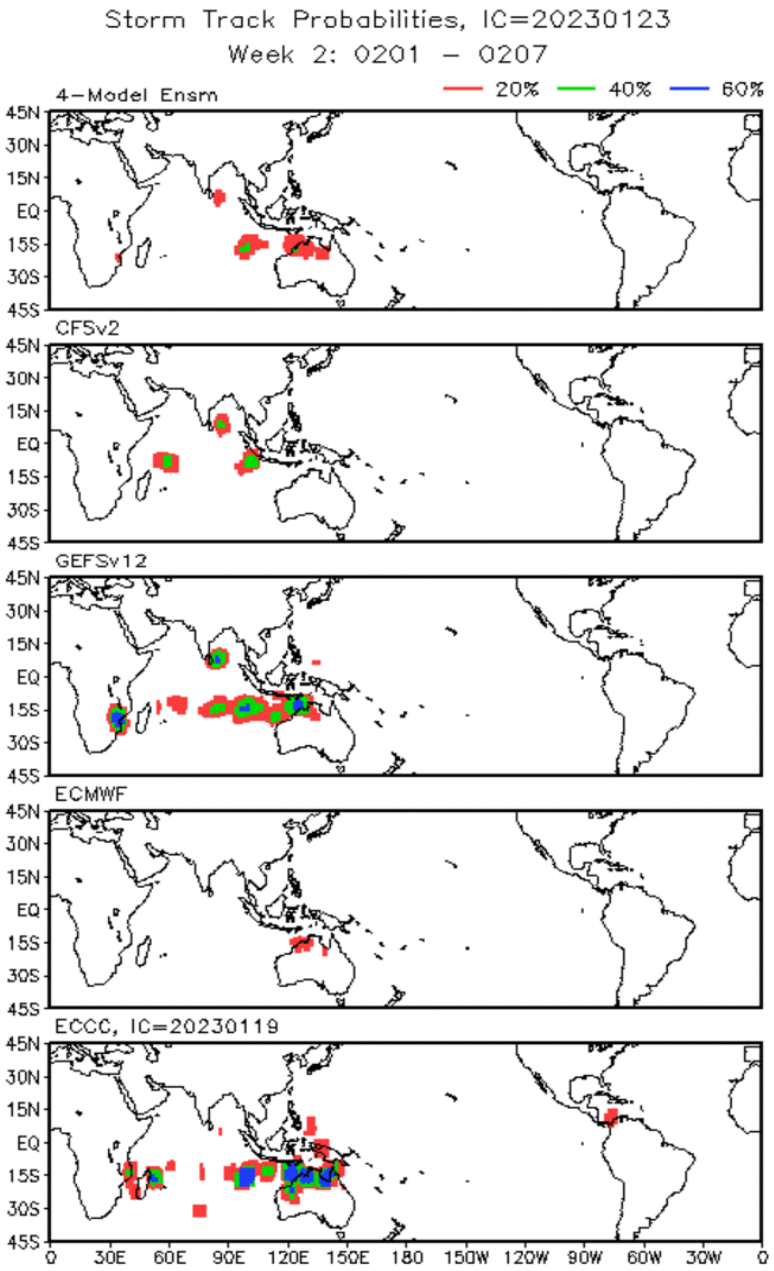


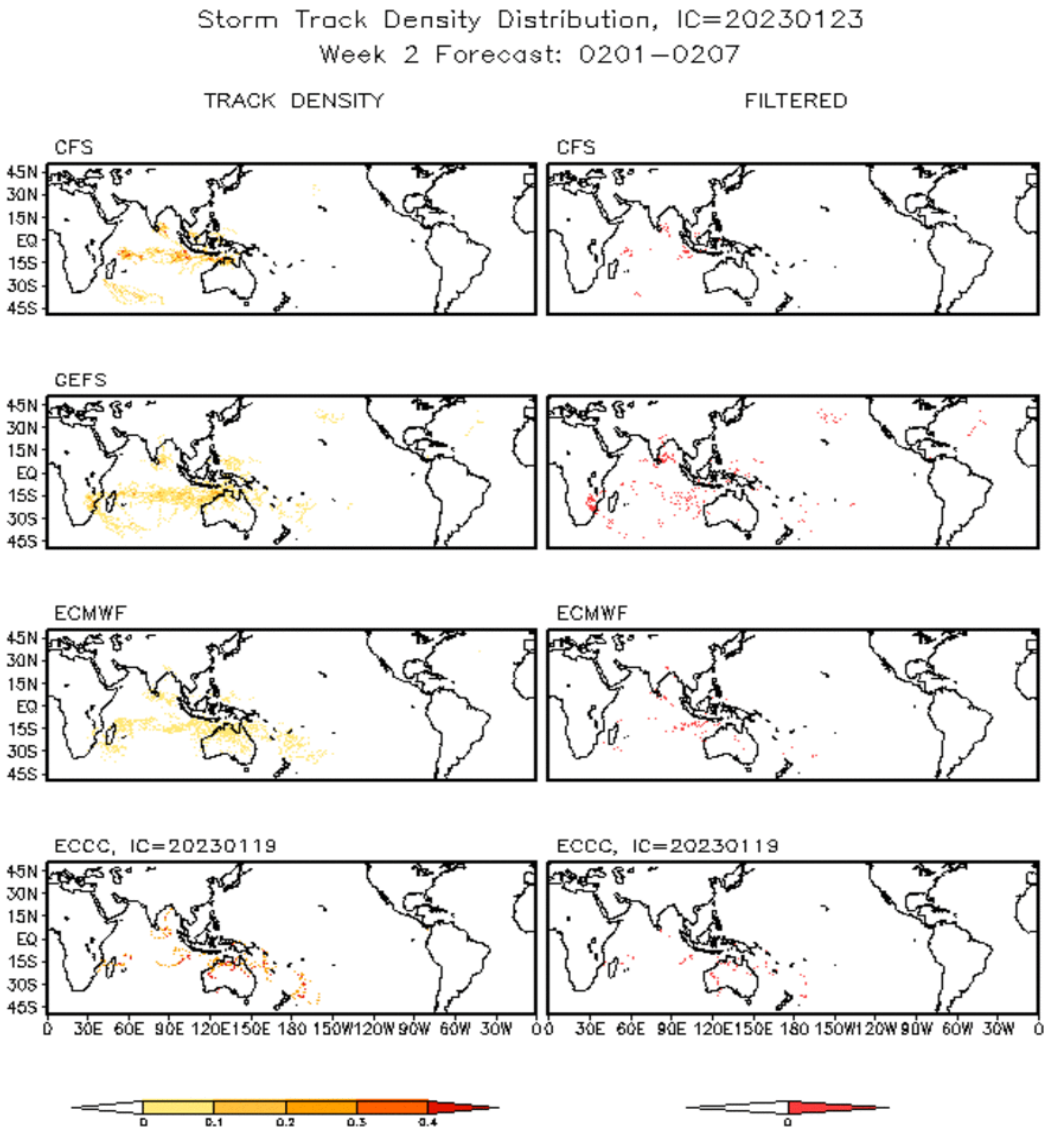



# Tropical Cyclone Monitoring/Forecast: JTWC



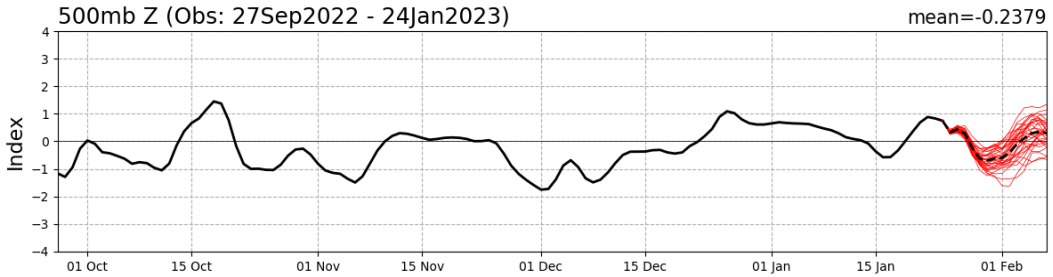
# Multi-Model TC Track Probabilities/Densities: Week-2

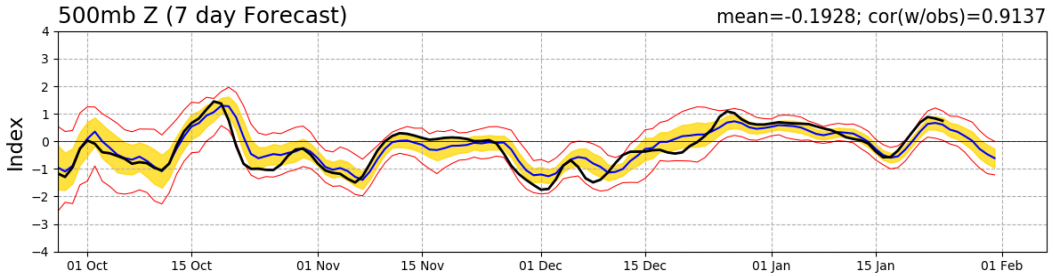


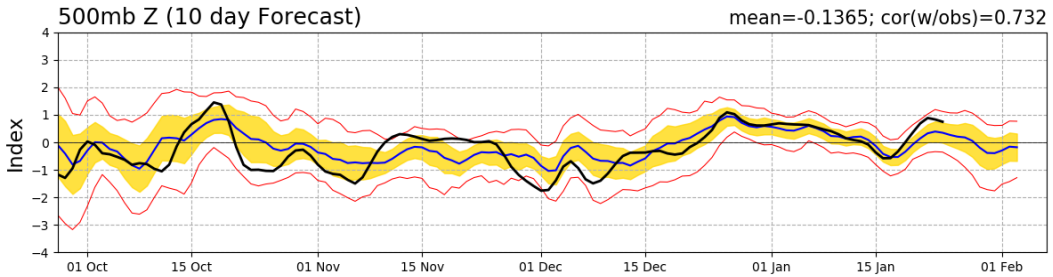



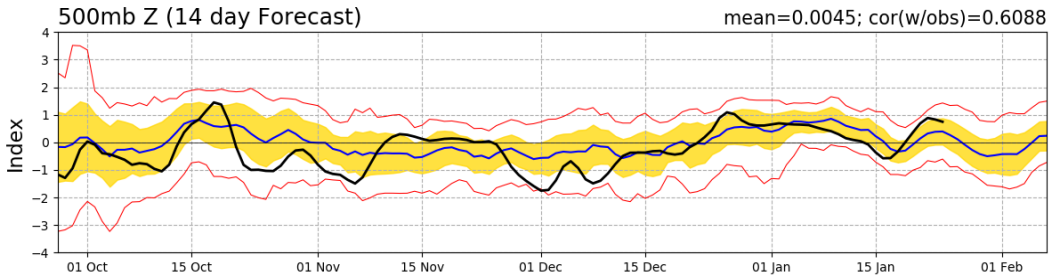
# Teleconnection Indices: PNA / AO:

## PNA Index: Observed & GEFS Forecasts

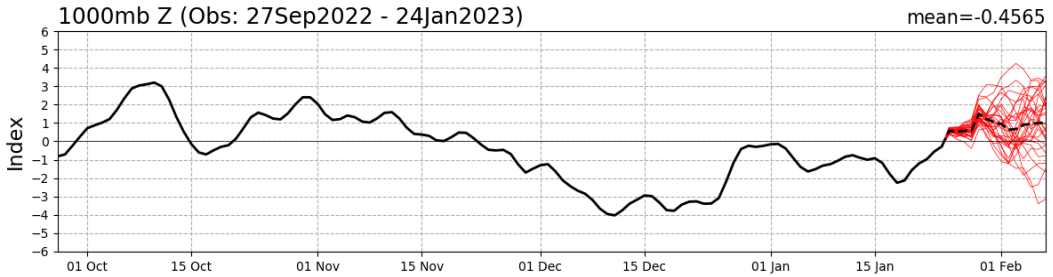


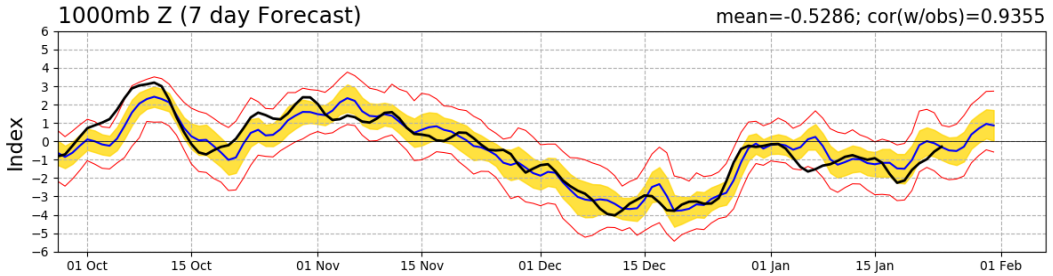



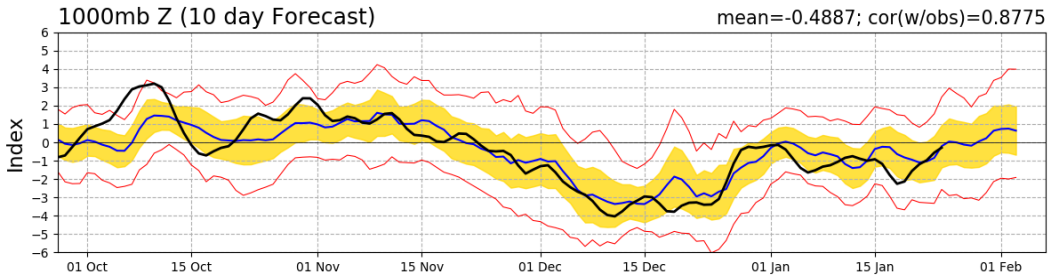



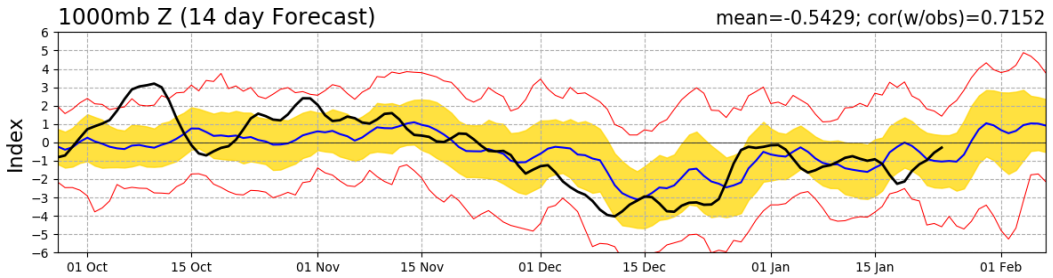




## AO Index: Observed & GEFS Forecasts

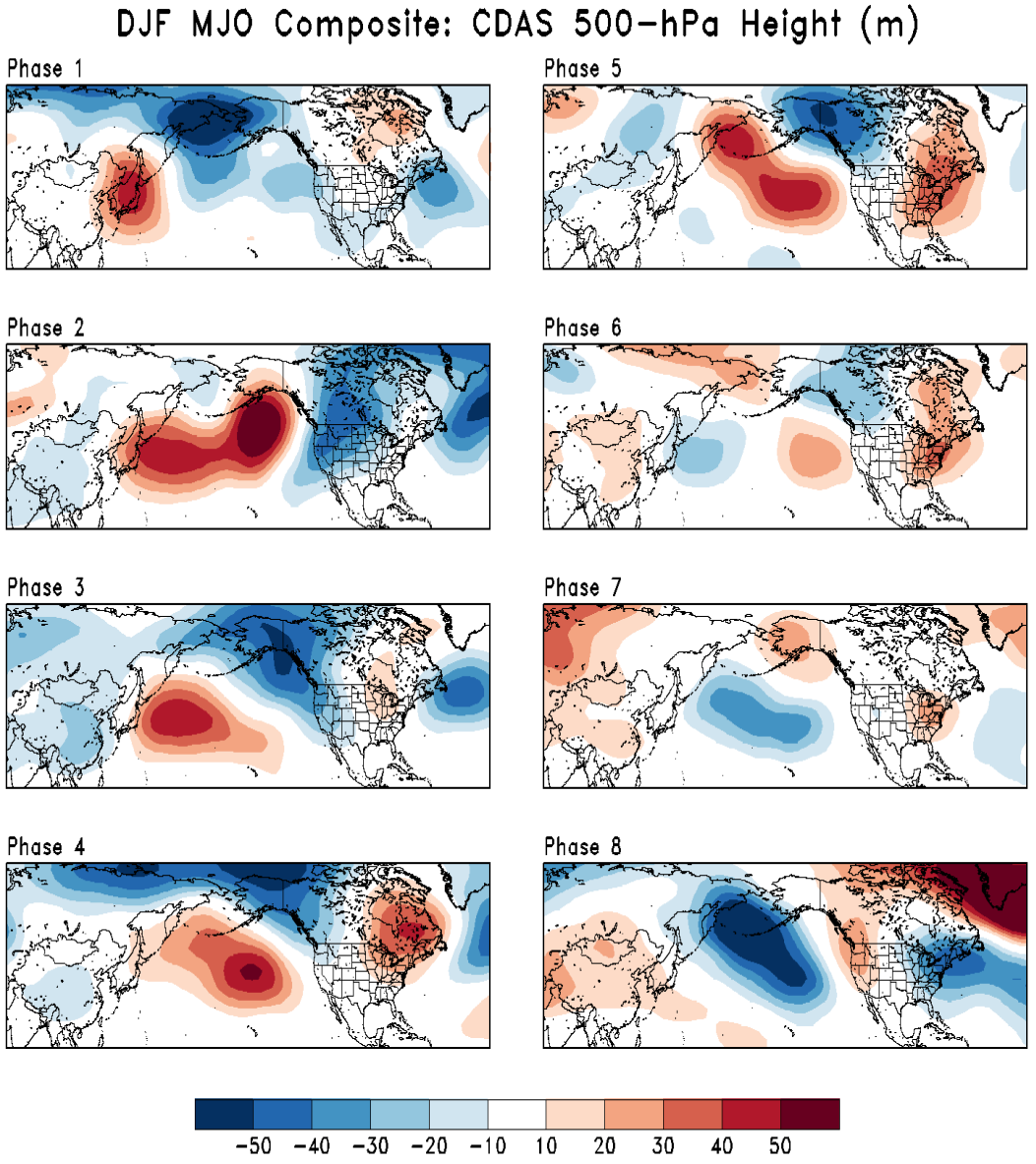


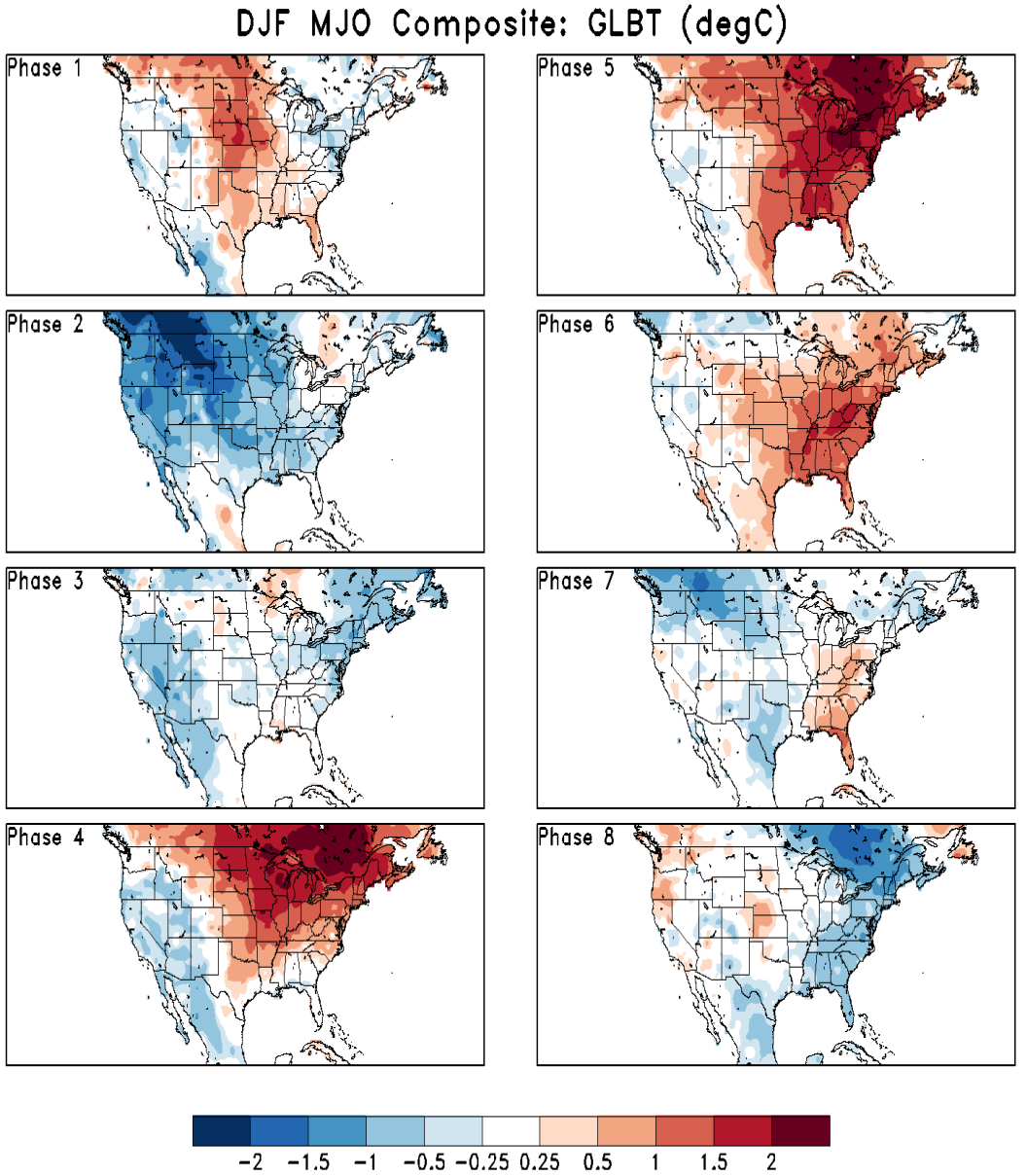



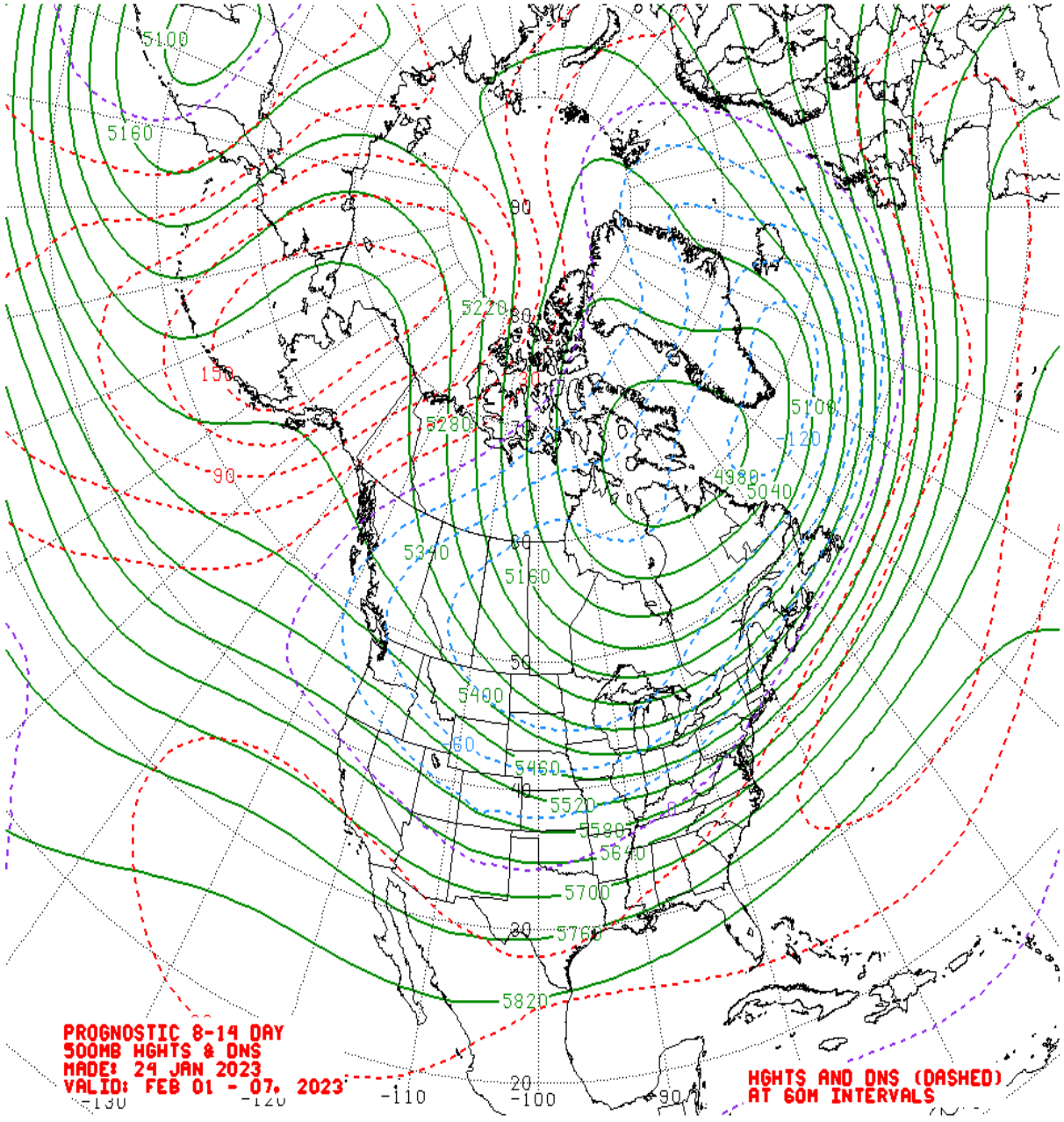



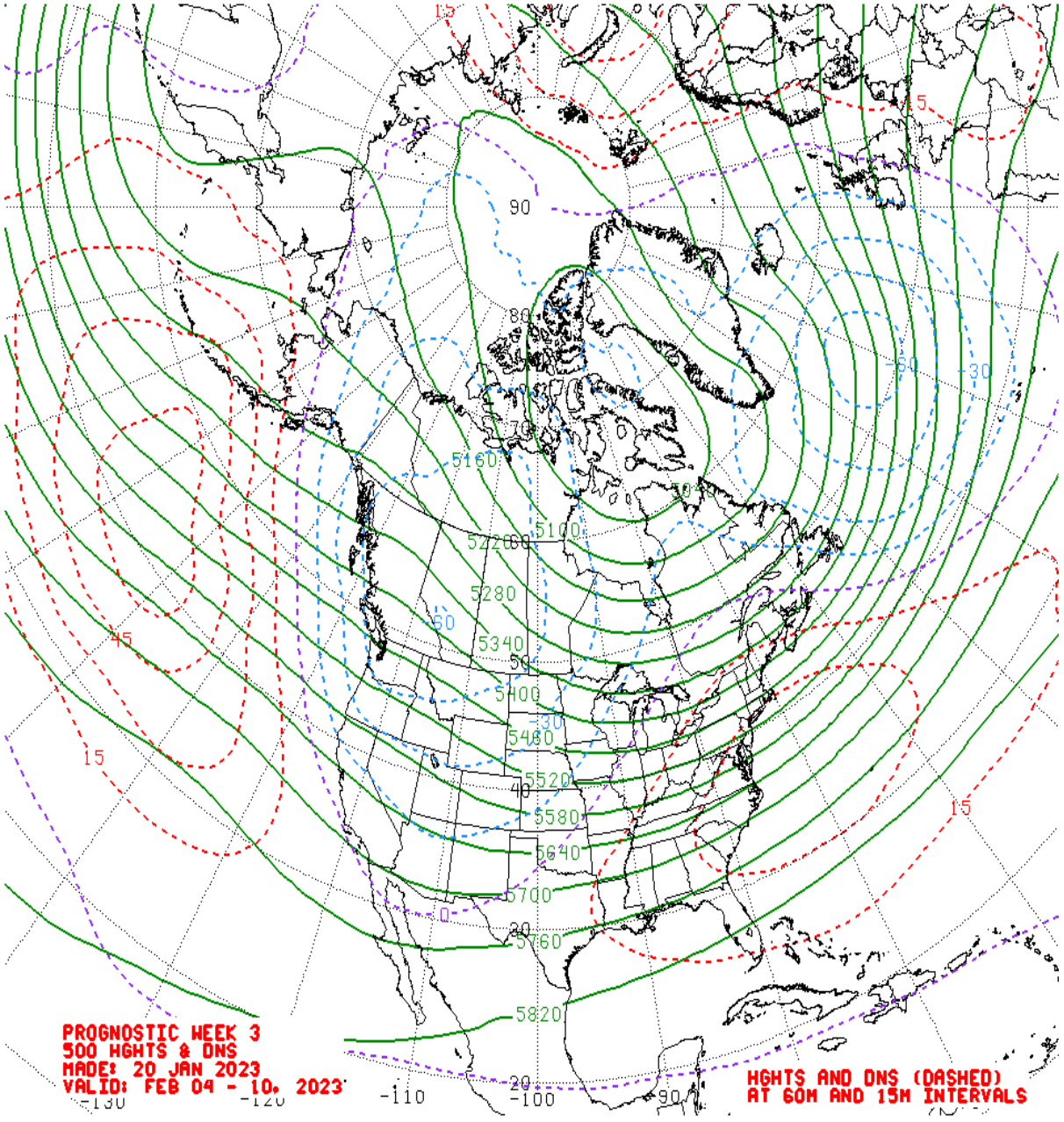
# Historical 500-hPa Height & U.S. Temperatures By MJO Phase:



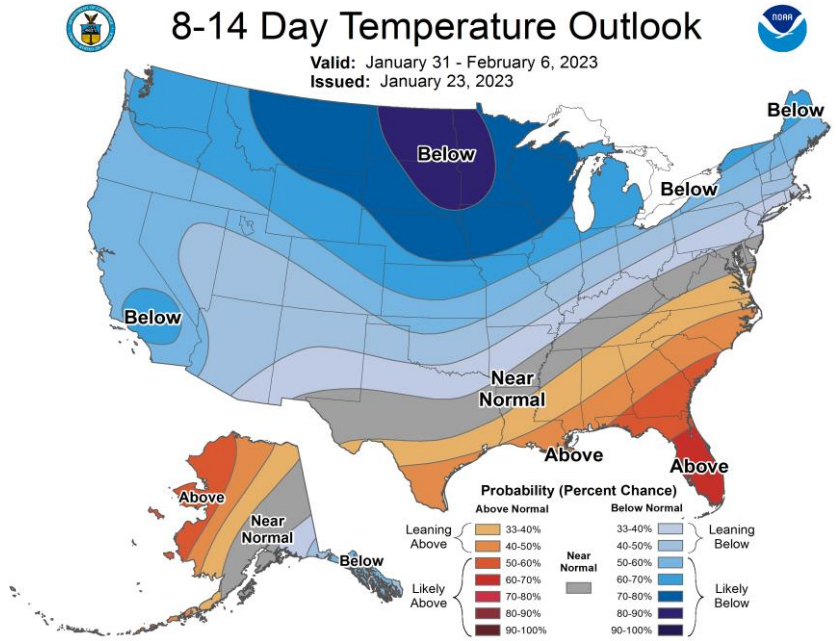



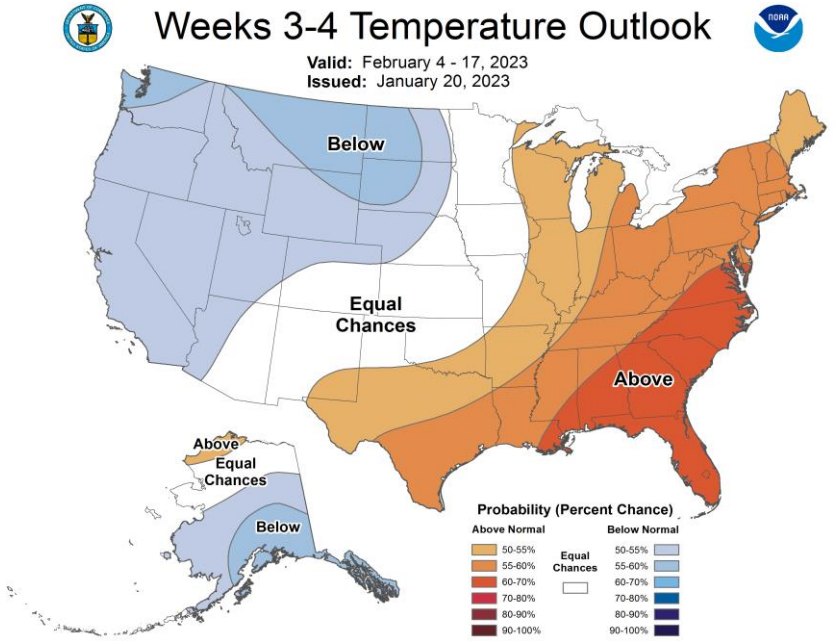
# Mean 500-hPa Height Anomaly Forecasts:

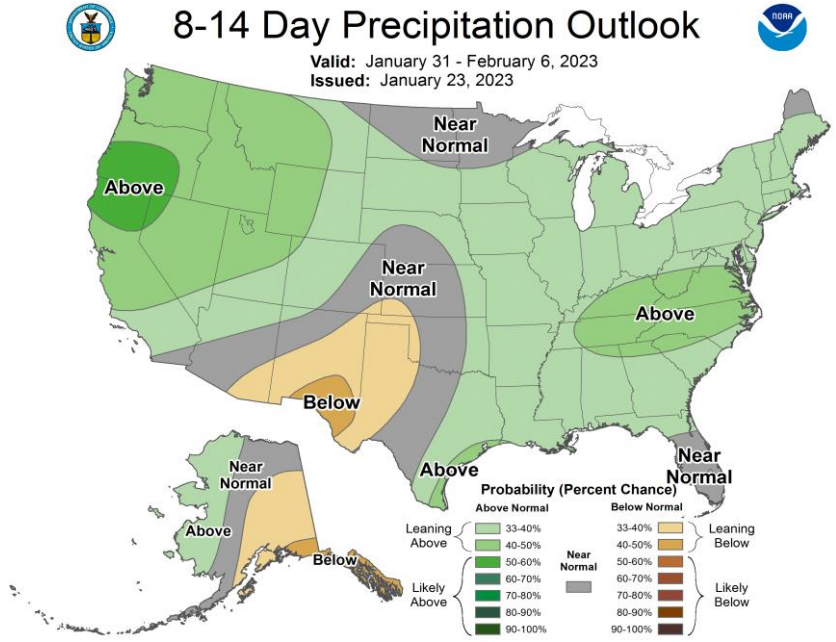


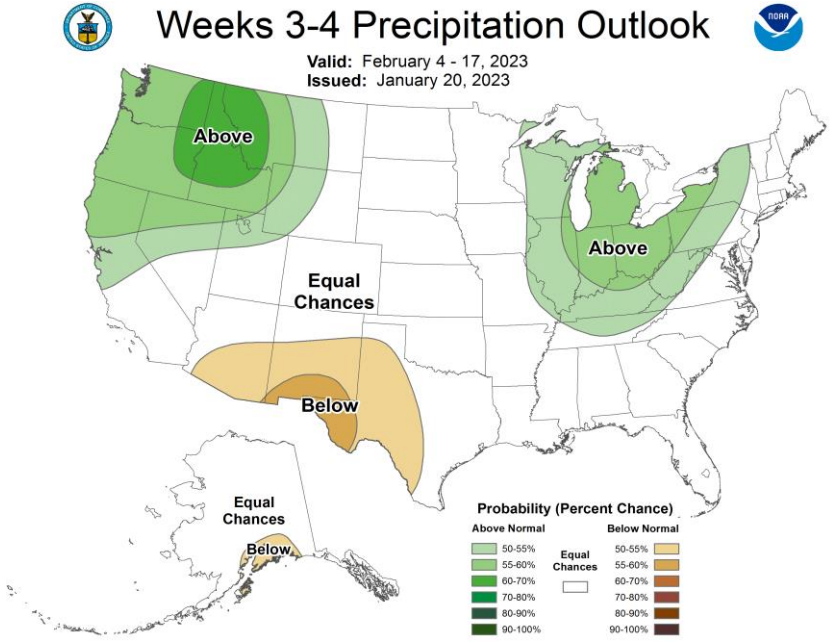



# Official Temperature & Precipitation Forecasts:

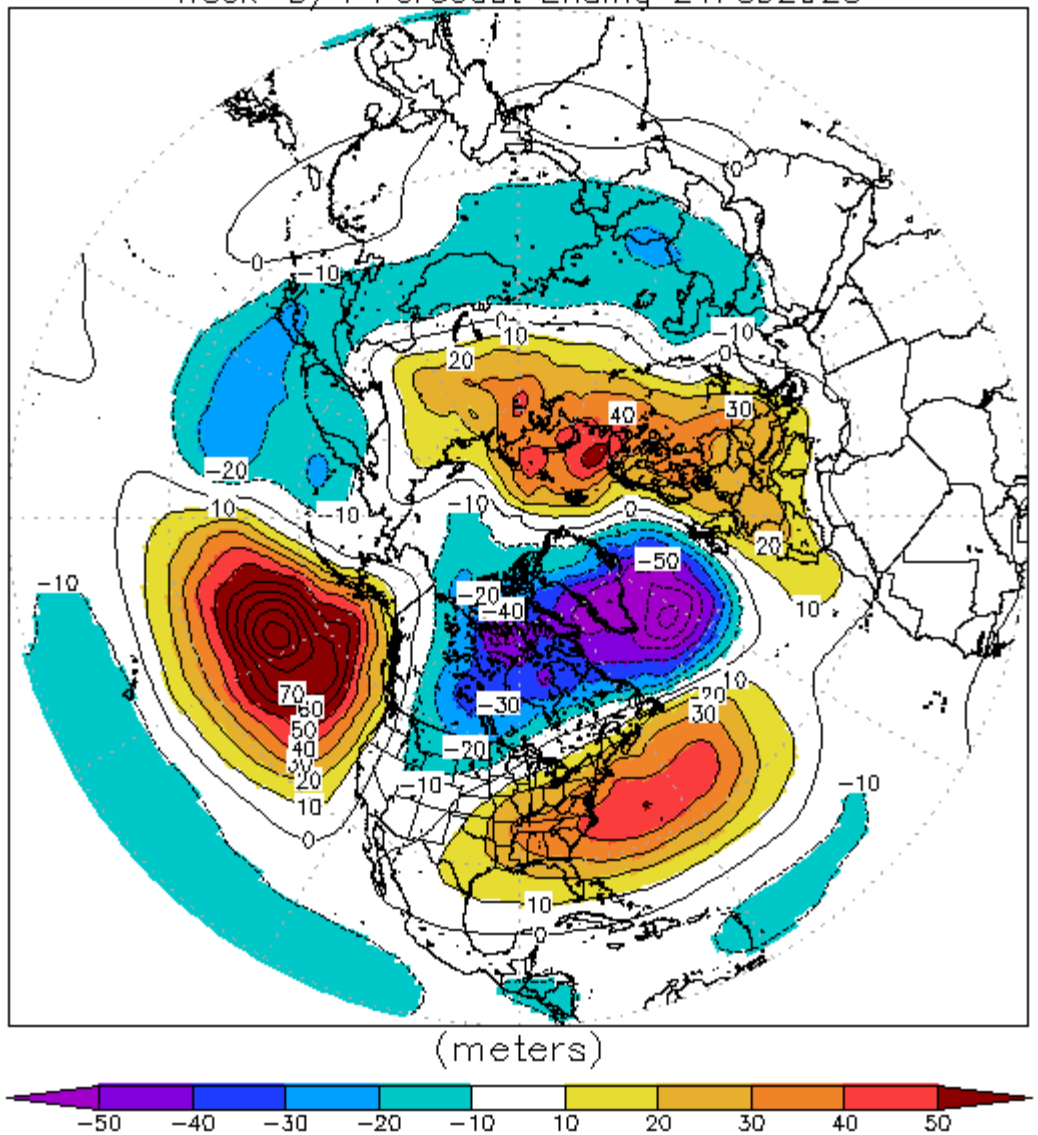


GEFS 500hPa Height Anomalies Issued 23Jan2023
Week-3/4 Forecast Ending 21Feb2023




GEFS Temperature Probabilities Issued 23Jan2023
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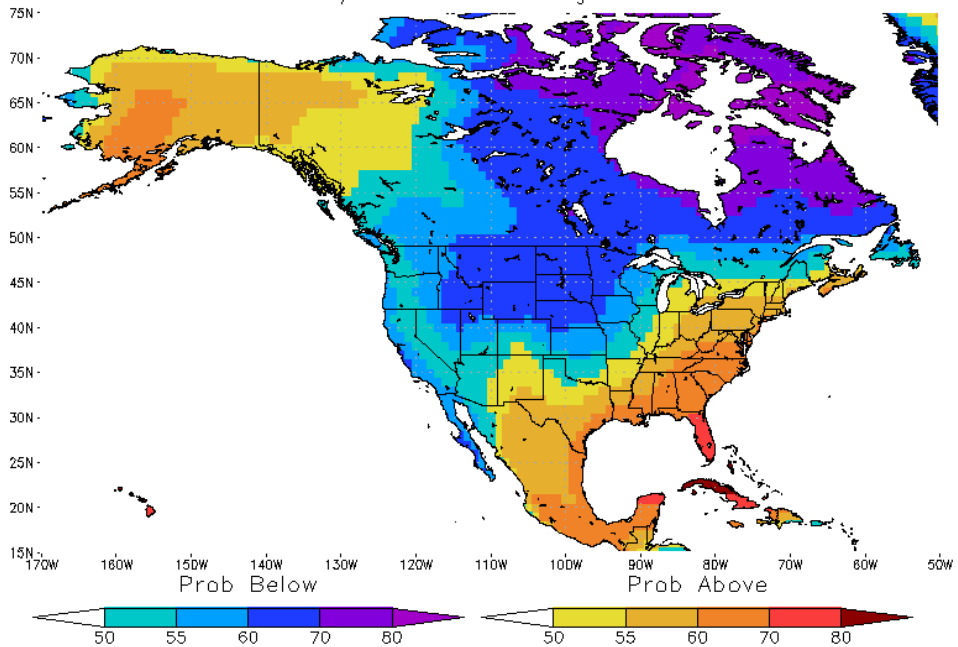


GEFS Precipitation Probabilities Issued 23Jan2023
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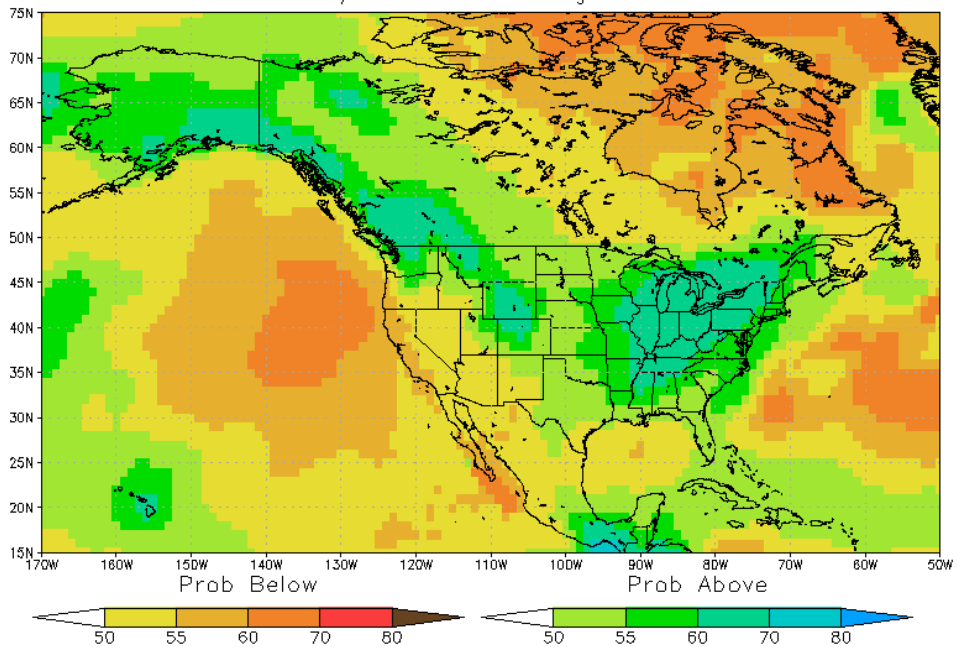

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## Climate Prediction Center

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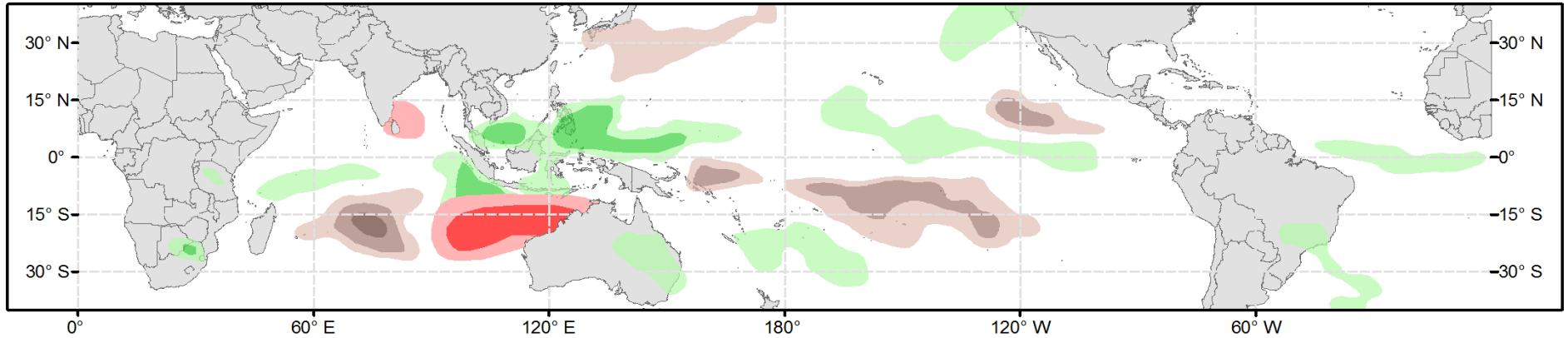


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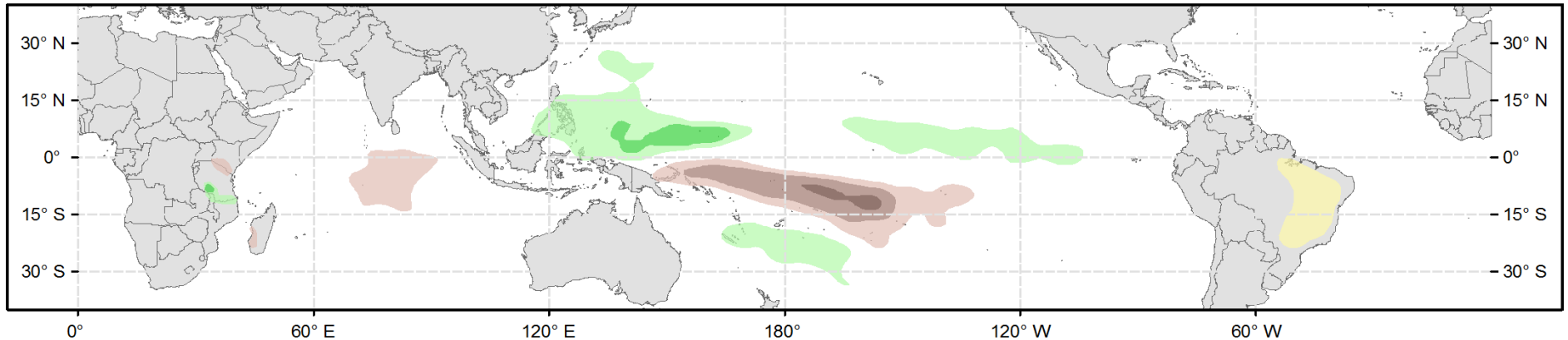


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