



# Weeks 2-3 Global Tropics Hazards Outlook

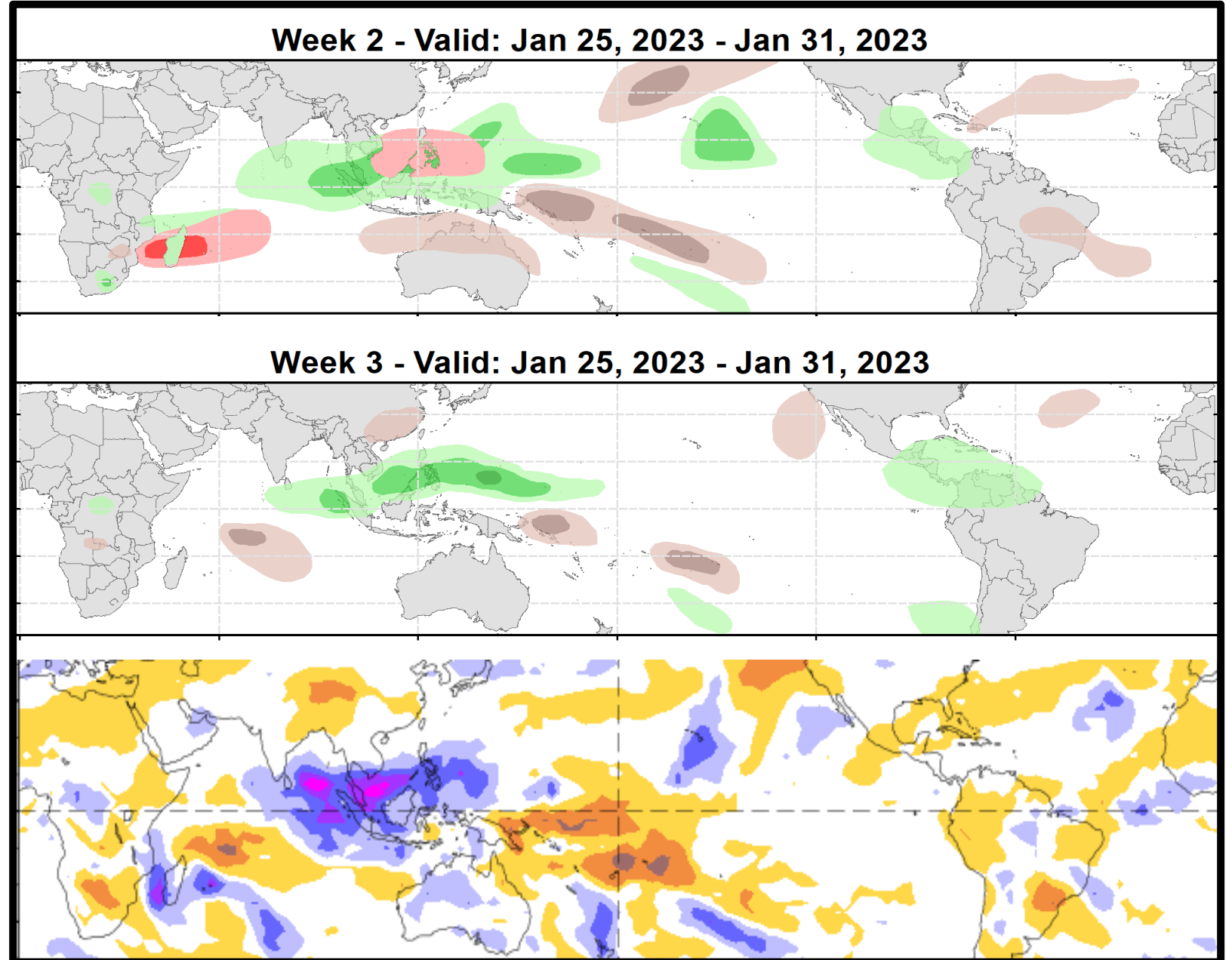
1/31/2023

Brad Pugh

NWS / NCEP / Climate Prediction Center

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

TC Cheneso: SW Indian Ocean  
(prior to week-2)



# Synopsis of Climate Modes:

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**ENSO:** (Jan 12, 2023 Update)      *next update on Thursday, Feb 9<sup>th</sup>*

- 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:**

- The MJO amplitude increased during late January with its enhanced phase over the Indian Ocean. However, eastward propagation of the MJO slowed.
- Dynamical model forecasts are in good agreement that eastward propagation resumes with the MJO shifting from the Indian Ocean to the Maritime Continent and West Pacific during the next two to three weeks.
- The large-scale environment is expected to be favorable for tropical cyclone development across the South Indian Ocean and near the Kimberley coast of Australia during week-2.
- The predicted MJO evolution through mid-February favors above-normal temperatures across the east-central United States during week-2.

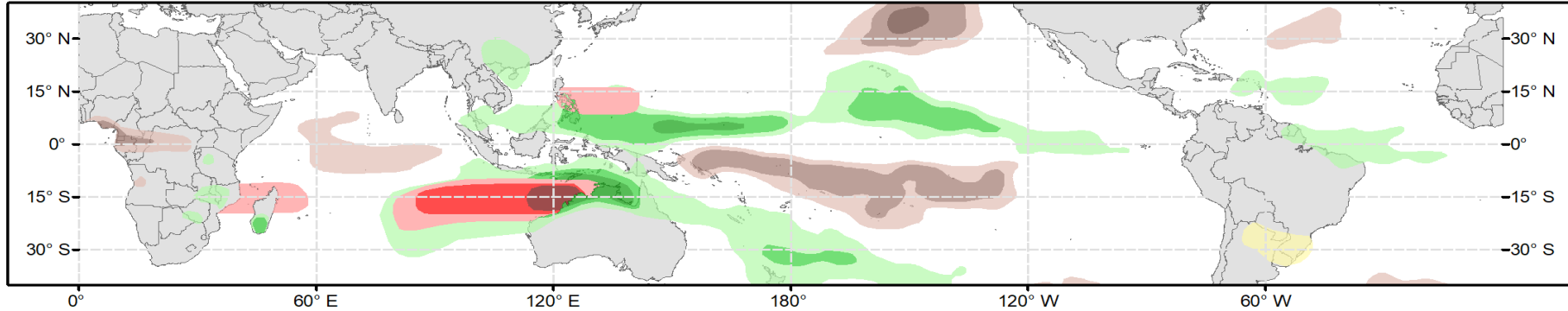
# GTH Outlook:



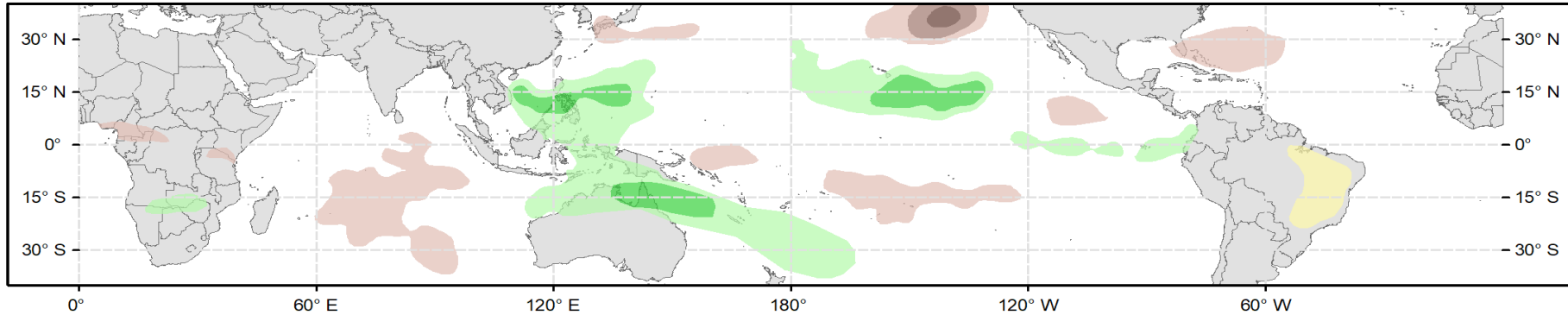
## Global Tropics Hazards Outlook Climate Prediction Center



**Week 2 - Valid: Feb 08, 2023 - Feb 14, 2023**



**Week 3 - Valid: Feb 15, 2023 - Feb 21, 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**

>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%

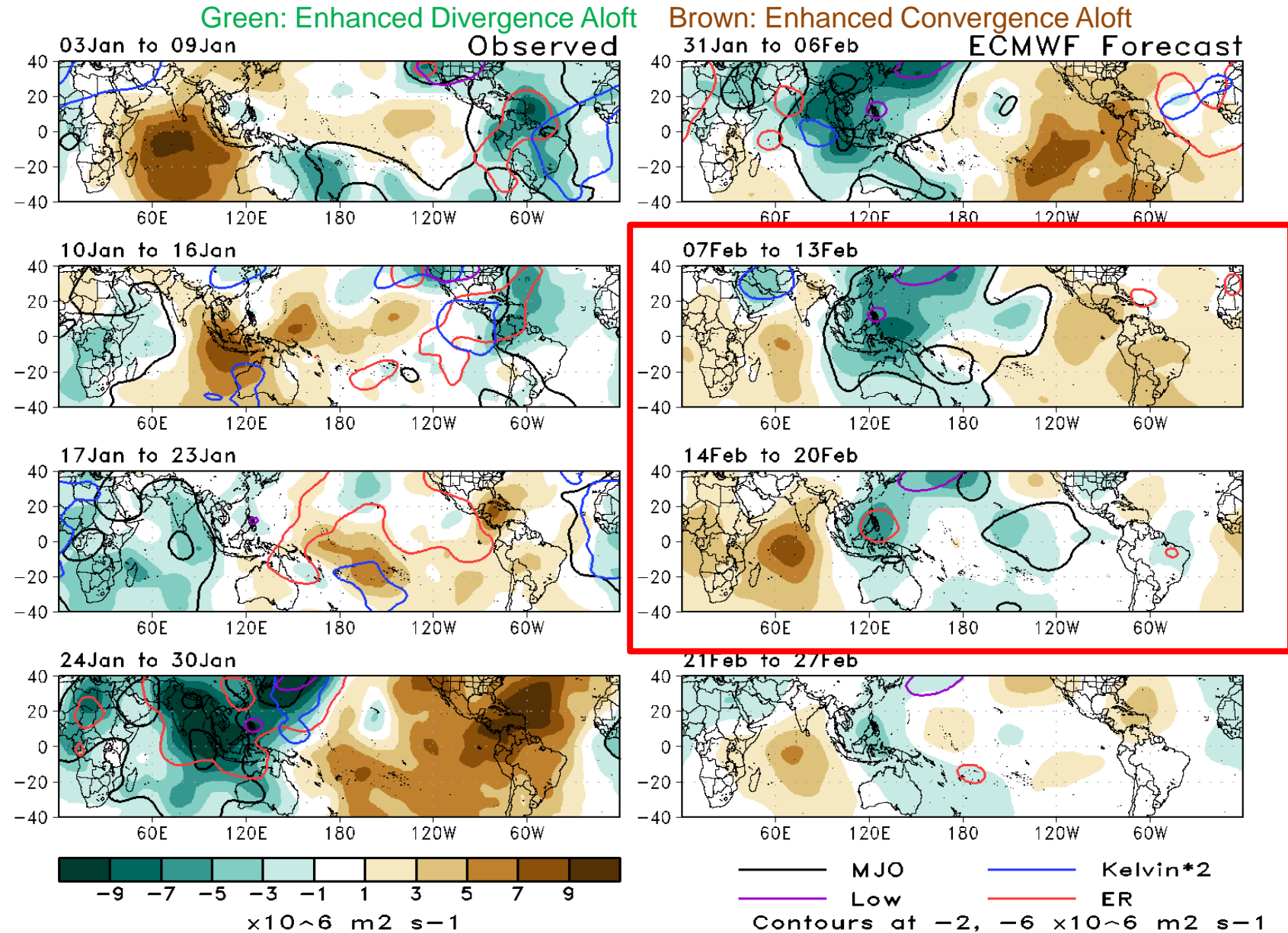
*7-day min temperatures in the Lower third of the historical range*

**Issued: 01/31/2023**  
**Forecaster: Pugh**

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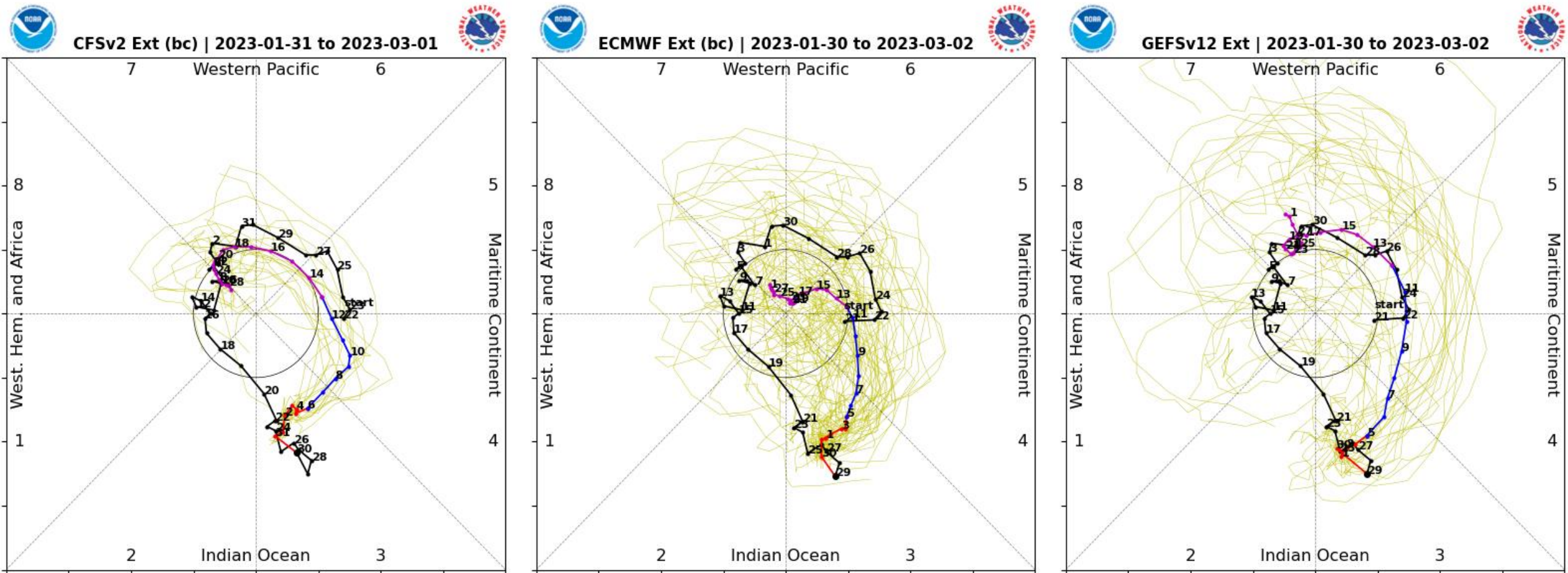
# 200-hPa Velocity Potential Anomaly Maps:

- Note the increasing magnitude of the anomalies by the final week of January.
- Anomalous upper-level divergence (enhanced rainfall) shifts east over the Maritime Continent and West Pacific during early to mid-February.
- A drying trend is likely overall across Africa and the Indian Ocean by week-3.





# RMM Index Observations & Forecasts:

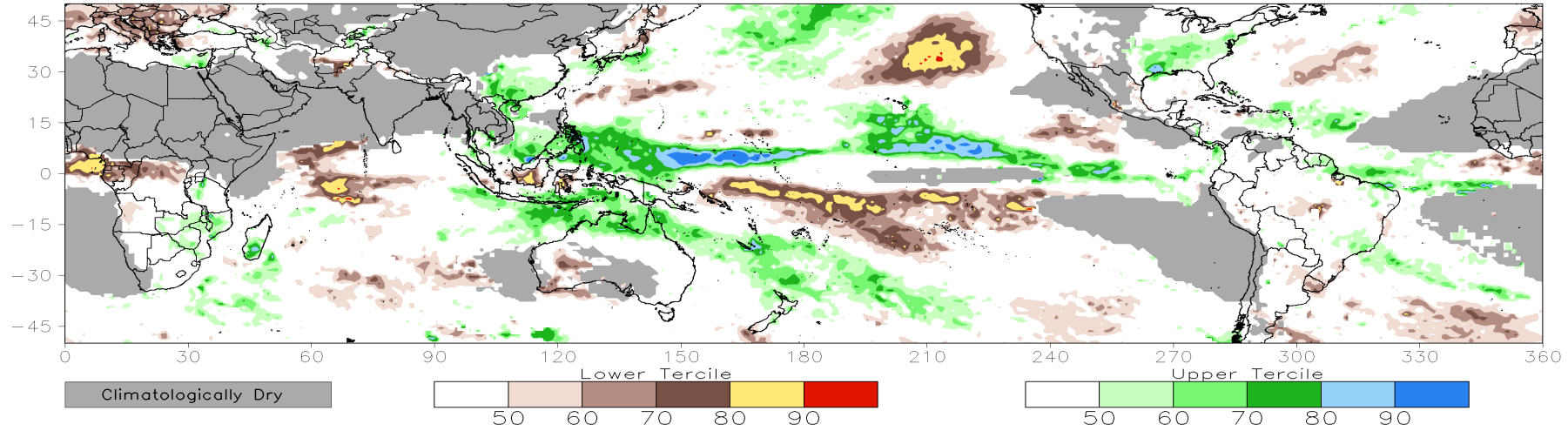


- The CFS, ECMWF, and GFS models depict eastward propagation with differences on the strength of the MJO.
- By late February, the MJO may begin to shift east to the Western Hemisphere.

# Consolidated Probabilistic Precipitation: Weeks 2 & 3

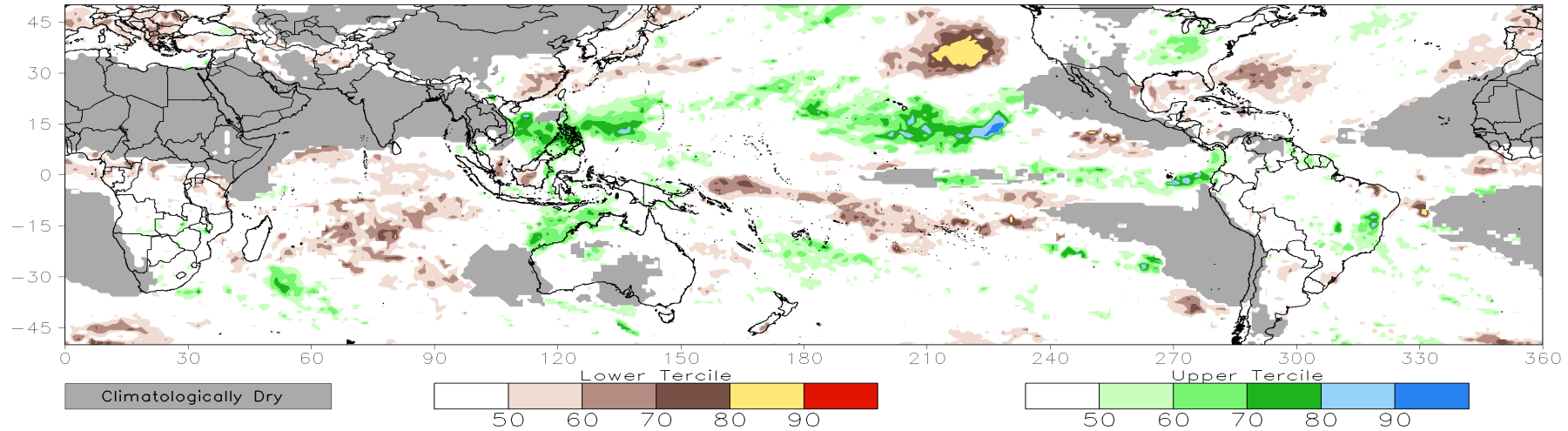
CONS 00z: Week2 Probability for Total Rainfall Below(Above) Lower(Upper) Tercile (%)

Valid: 08Feb2023–14Feb2023



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

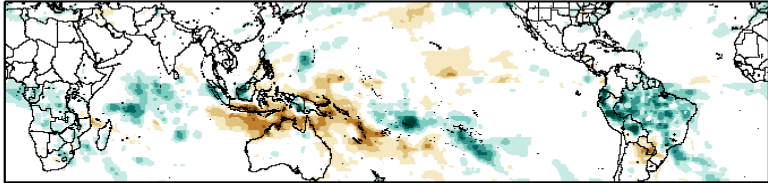
Valid: 15Feb2023–21Feb2023



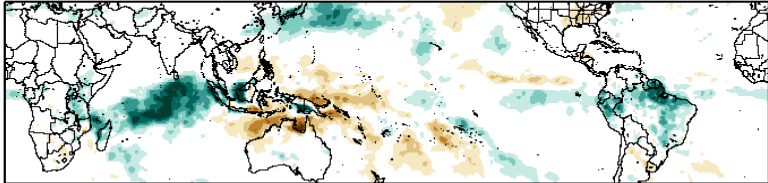
# Historical Precipitation Anomalies By MJO Phase:

DJF MJO Composite: GPCP1DD (mm/day)

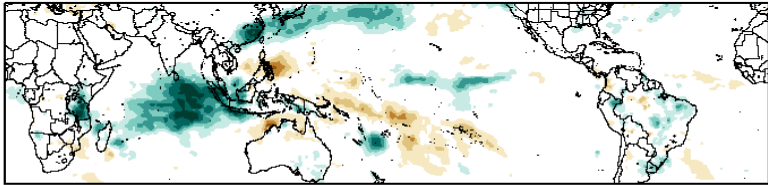
Phase 1



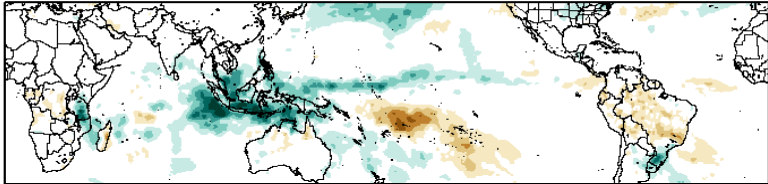
Phase 2



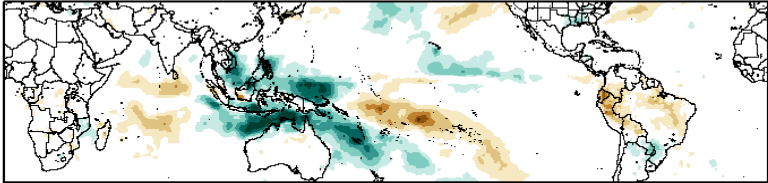
Phase 3



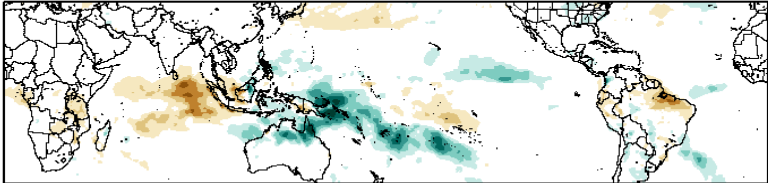
Phase 4



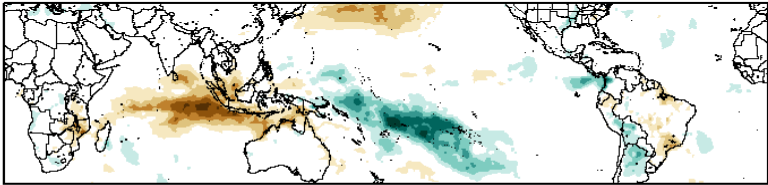
Phase 5



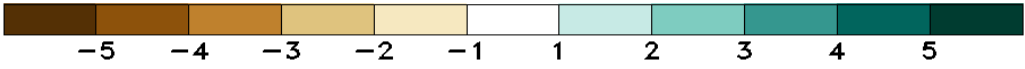
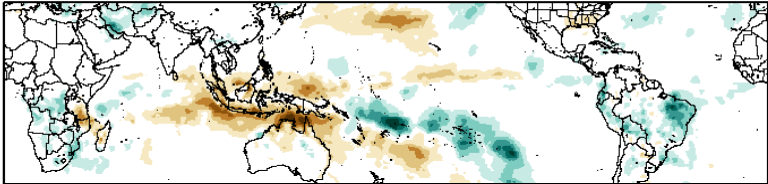
Phase 6



Phase 7



Phase 8

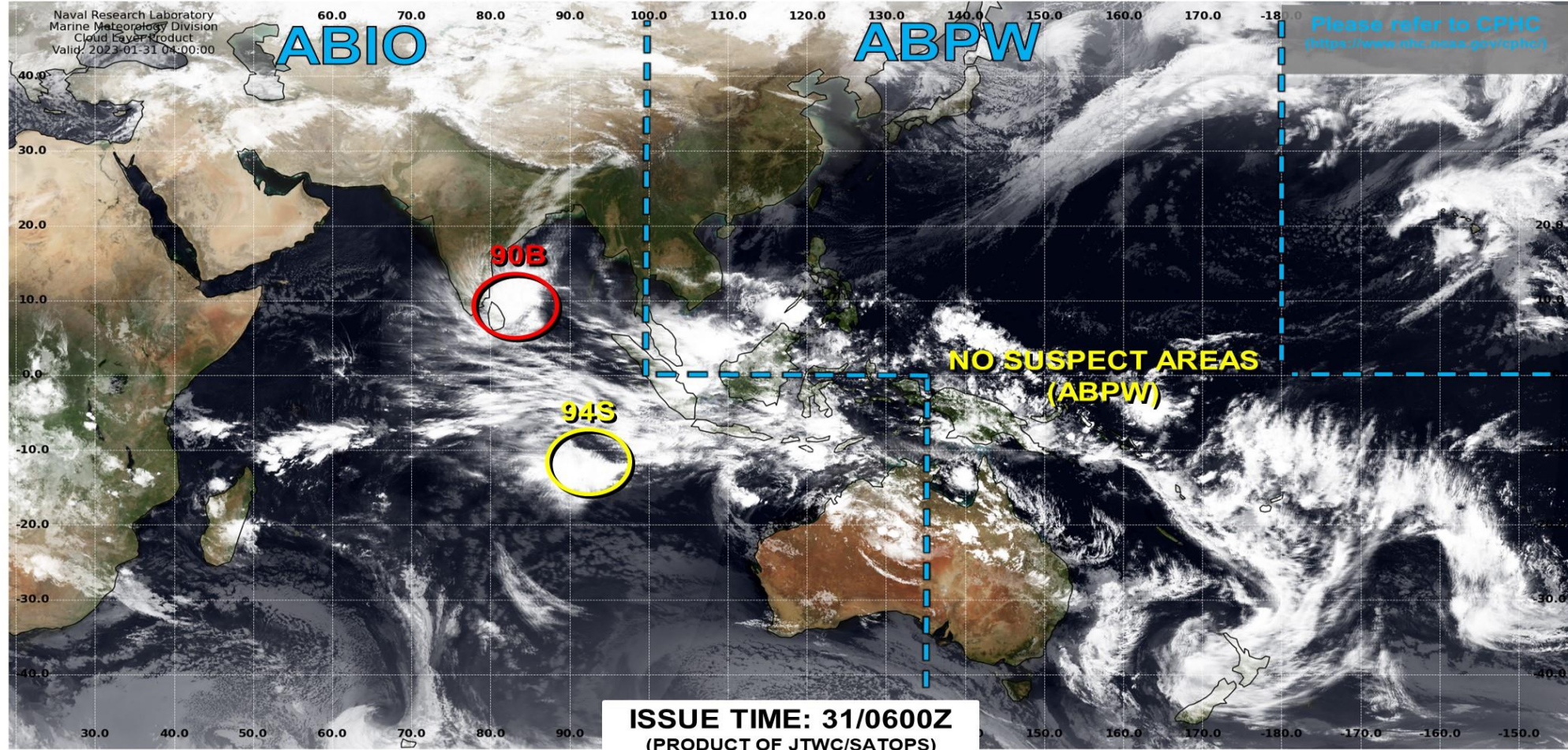




# Tropical Cyclone Monitoring/Forecast: JTWC



## 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)



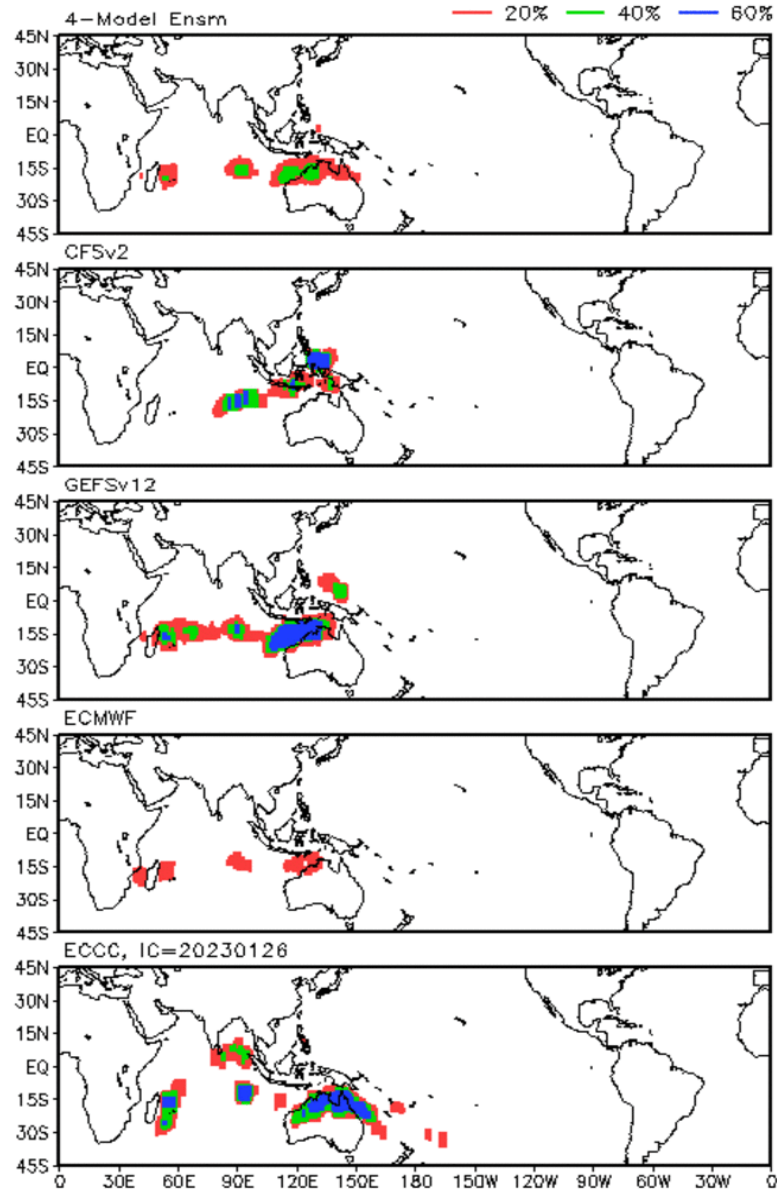
Monitoring for potential transition to TC. Invest label color denotes tropical transition probability



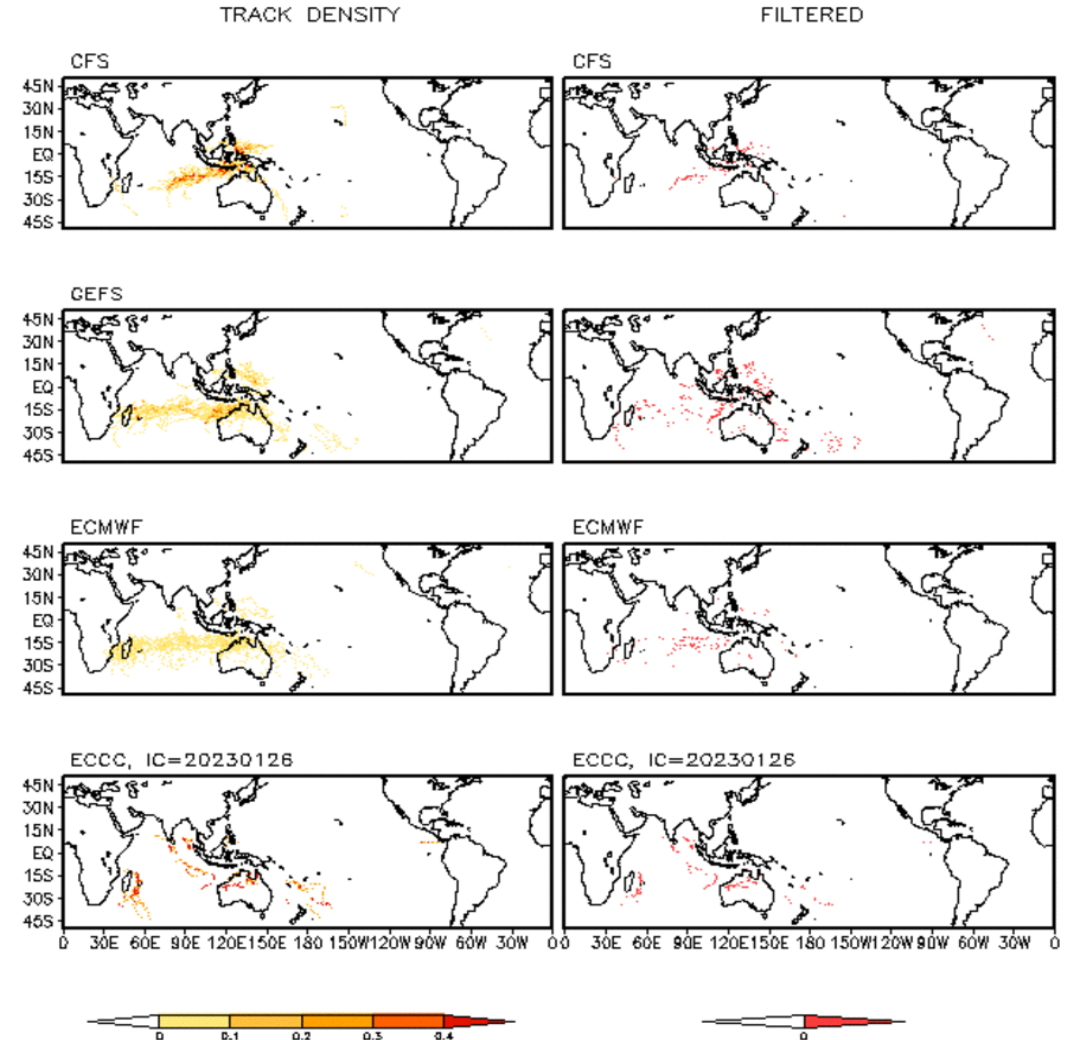


# Multi-Model TC Track Probabilities/Densities: Week-2

Storm Track Probabilities, IC=20230130  
Week 2: 0208 - 0214

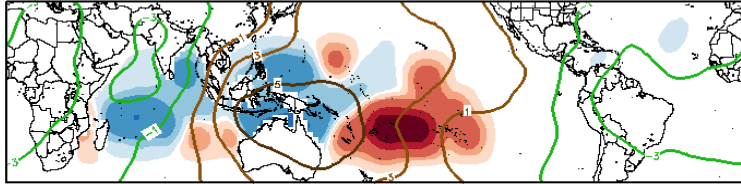


Storm Track Density Distribution, IC=20230130  
Week 2 Forecast: 0208-0214

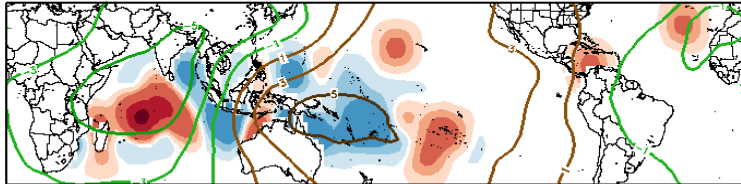


# Historical TC Origin Anomalies By MJO Phase & Weeks 2+3 Genesis Climo:

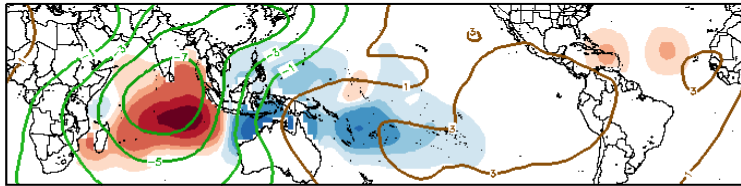
DJF MJO Composite: Mean TC Origin Density Anomaly ( $\#TCs/277km^2*100$ )  
w/ DJF CHI200 ( $\times 10^{-6} m^{-2} s^{-1}$ ) / Contours every  $2 \times 10^{-6} m^{-2} s^{-1}$



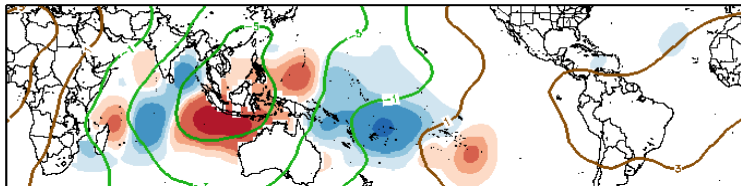
Phase 1



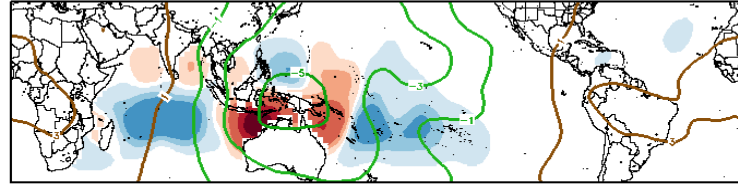
Phase 2



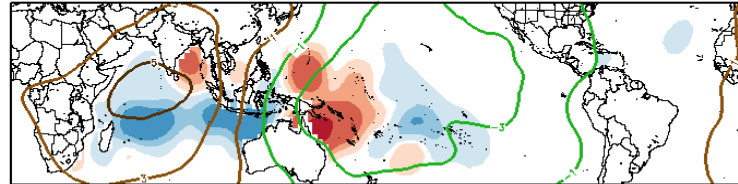
Phase 3



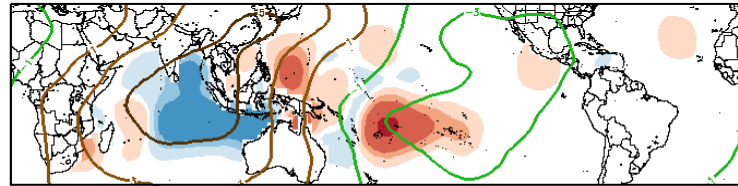
Phase 4



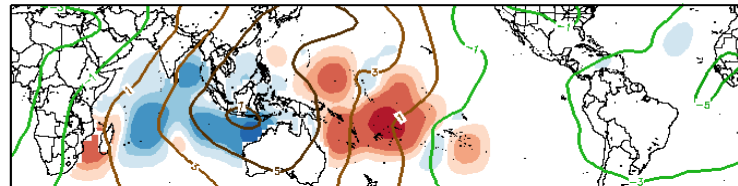
Phase 5



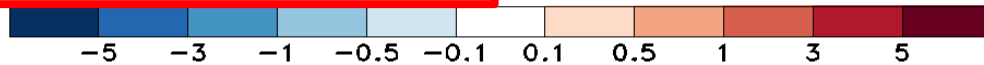
Phase 6



Phase 7



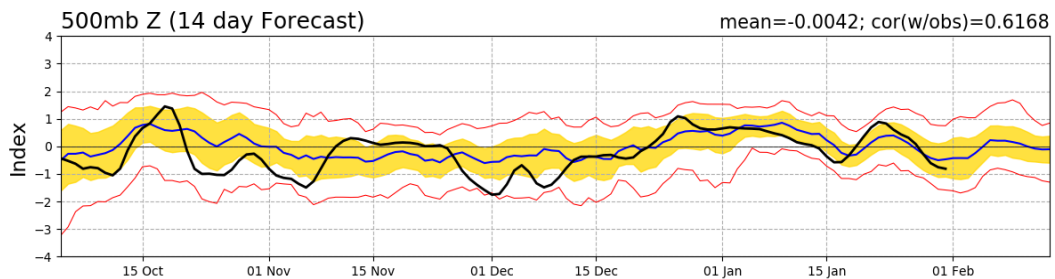
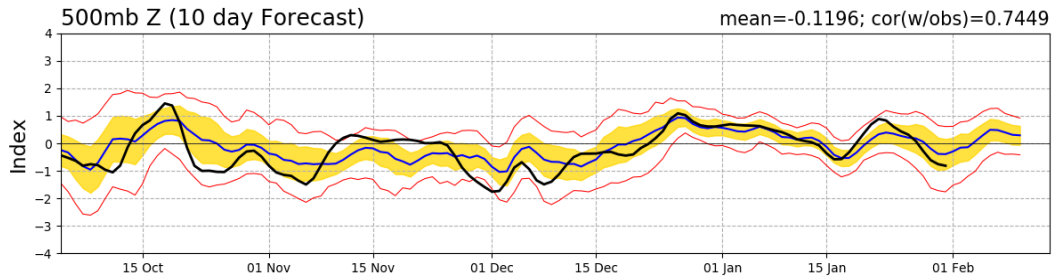
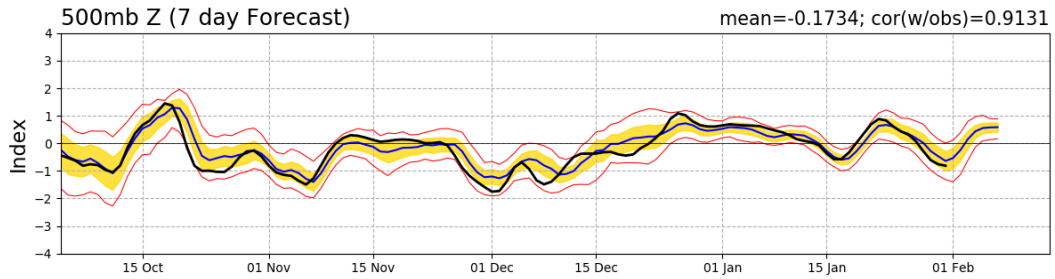
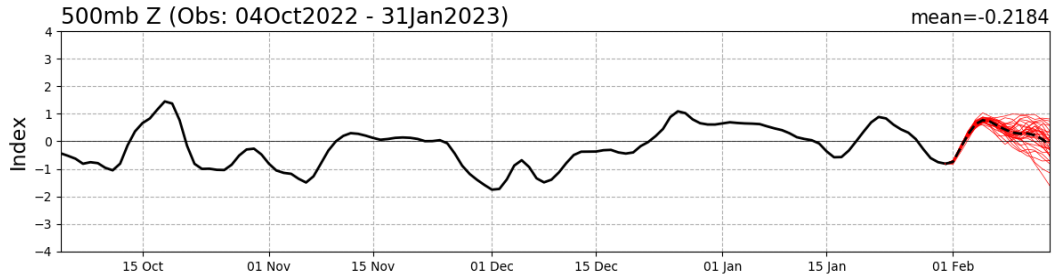
Phase 8



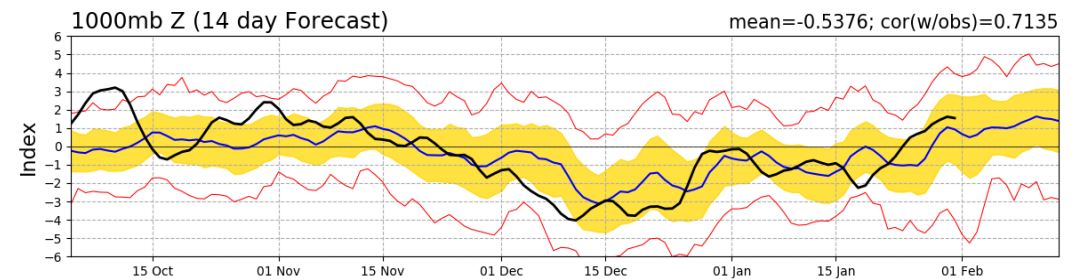
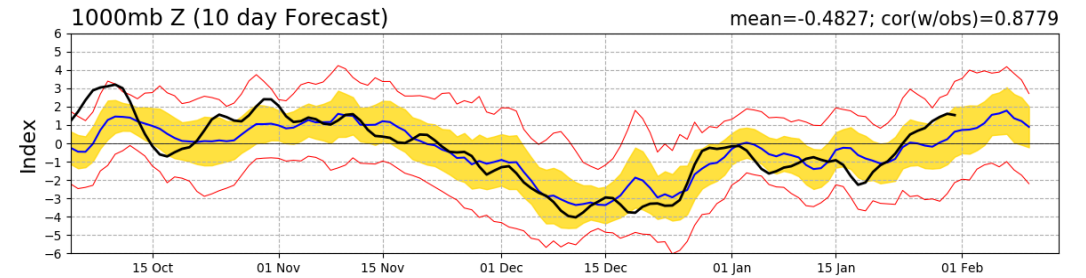
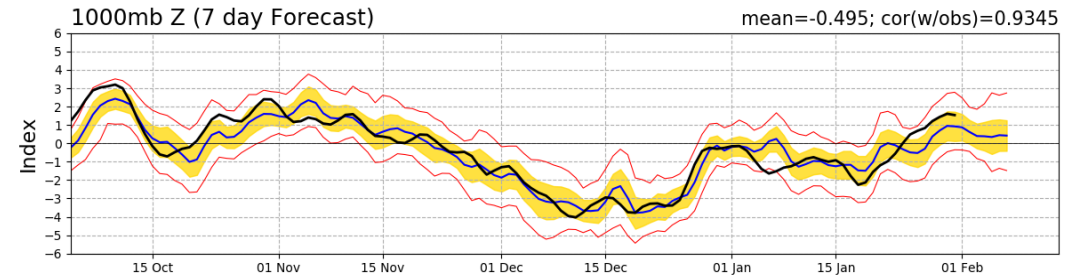
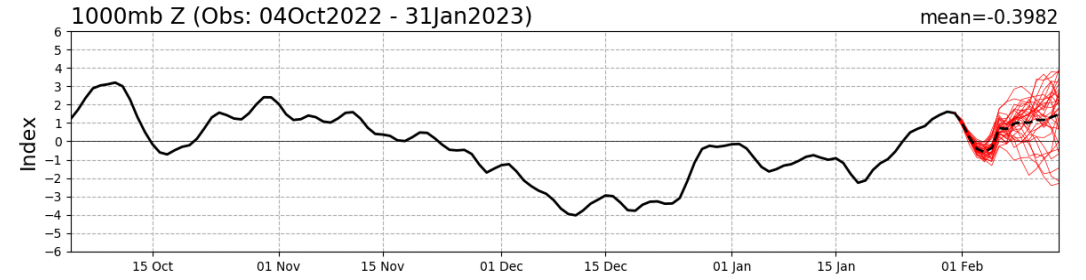
\*Experimental\*

# Teleconnection Indices: PNA / AO:

## PNA Index: Observed & GEFS Forecasts



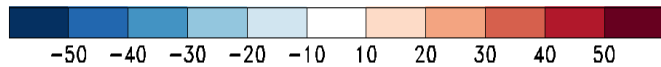
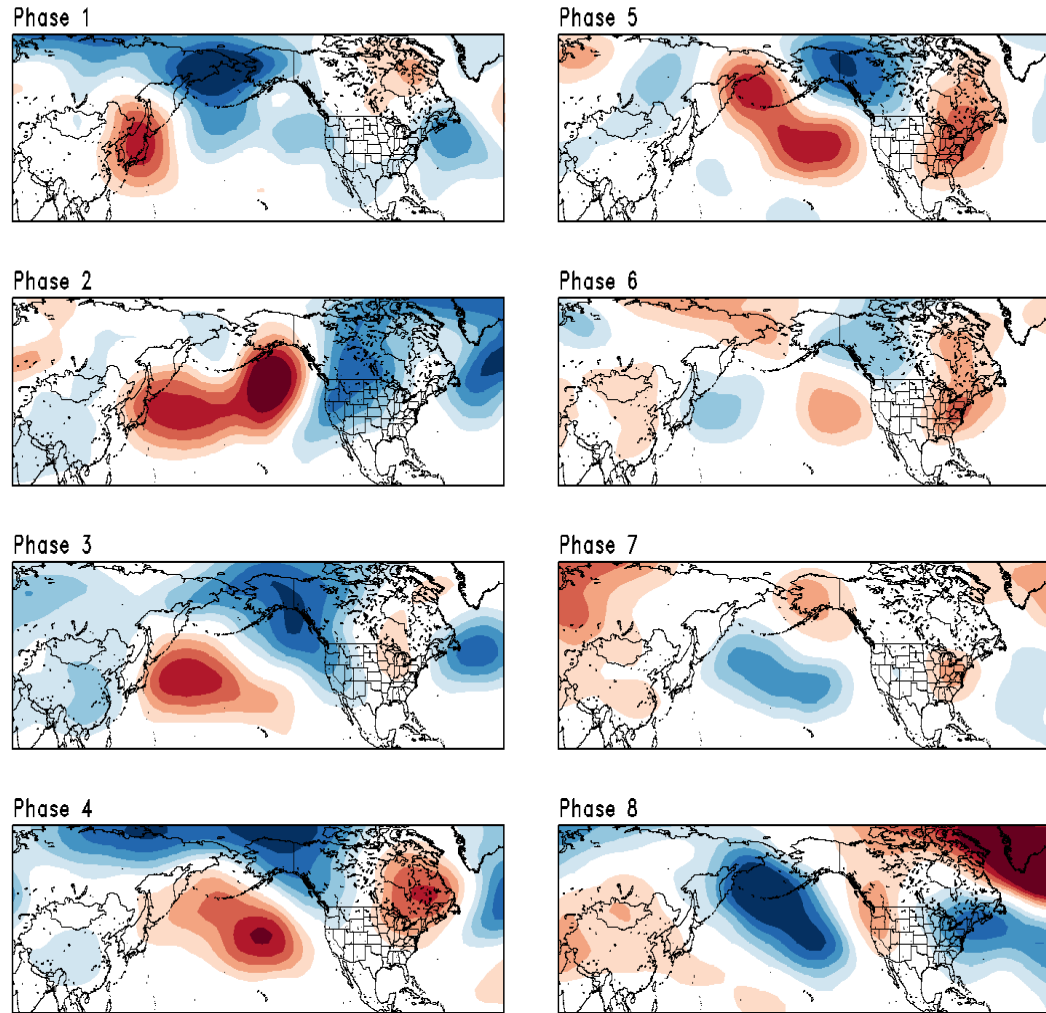
## AO Index: Observed & GEFS Forecasts



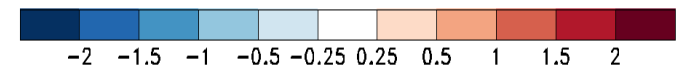
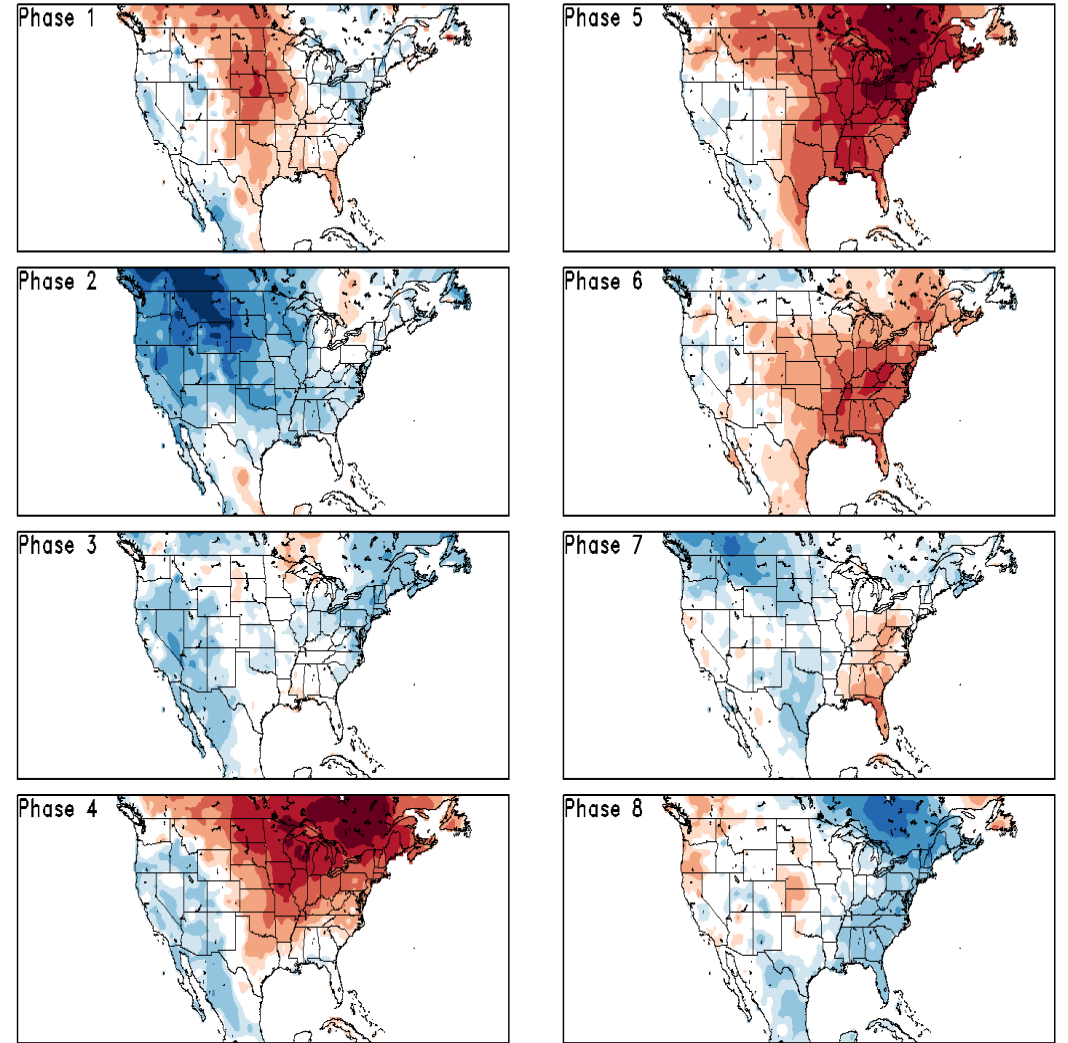


# Historical 500-hPa Height & U.S. Temperatures By MJO Phase:

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

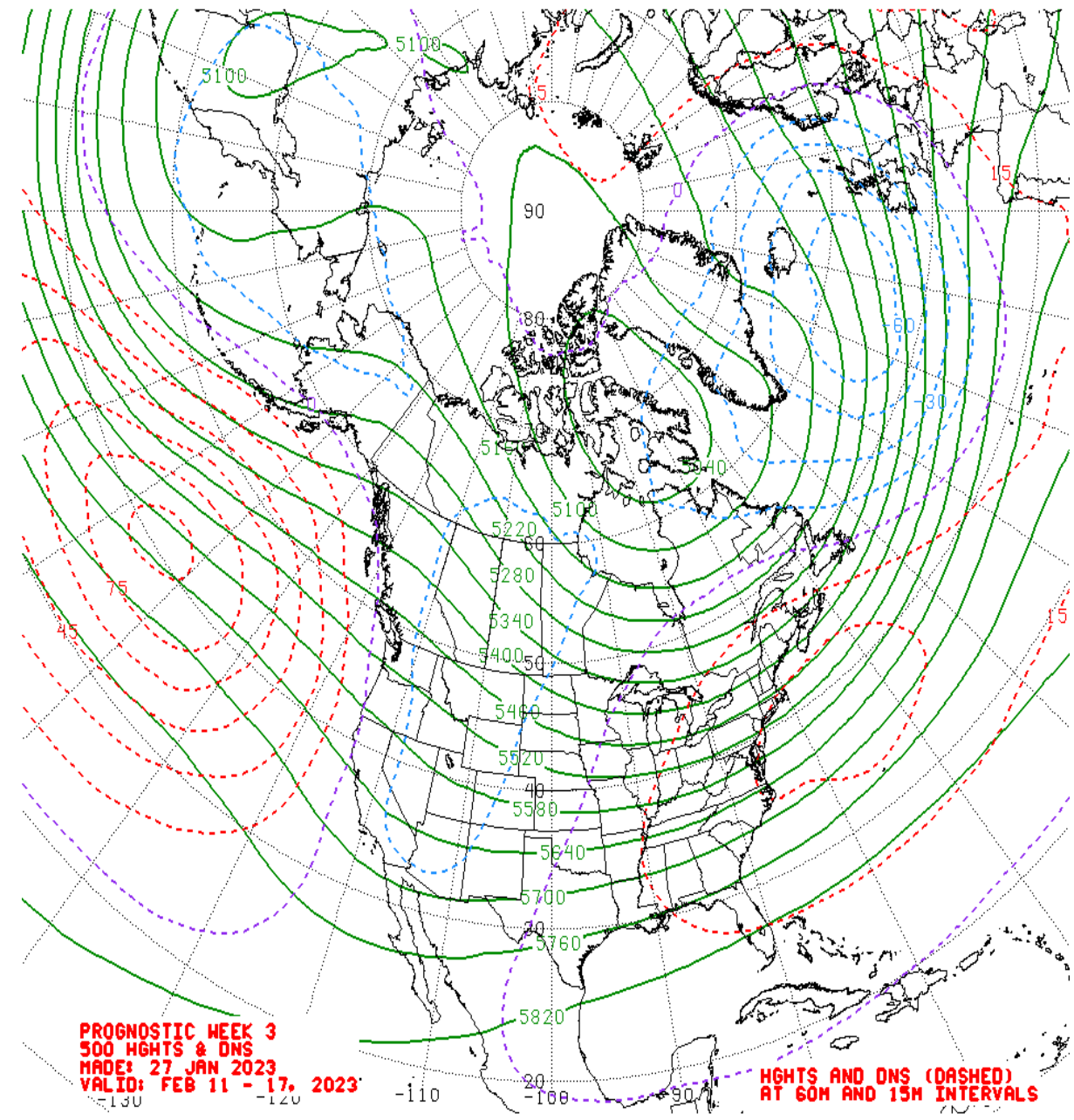
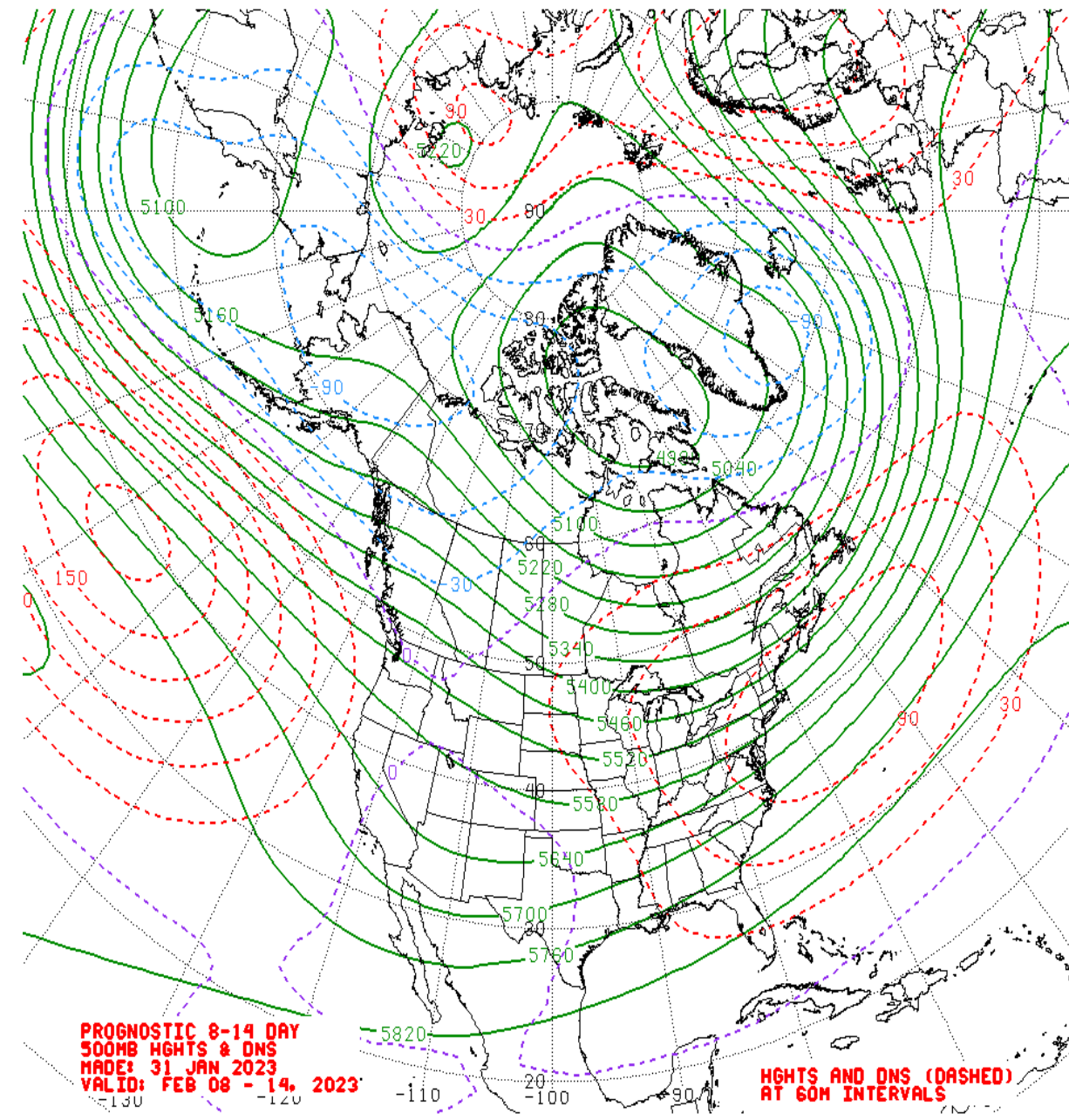


DJF MJO Composite: GLBT (degC)





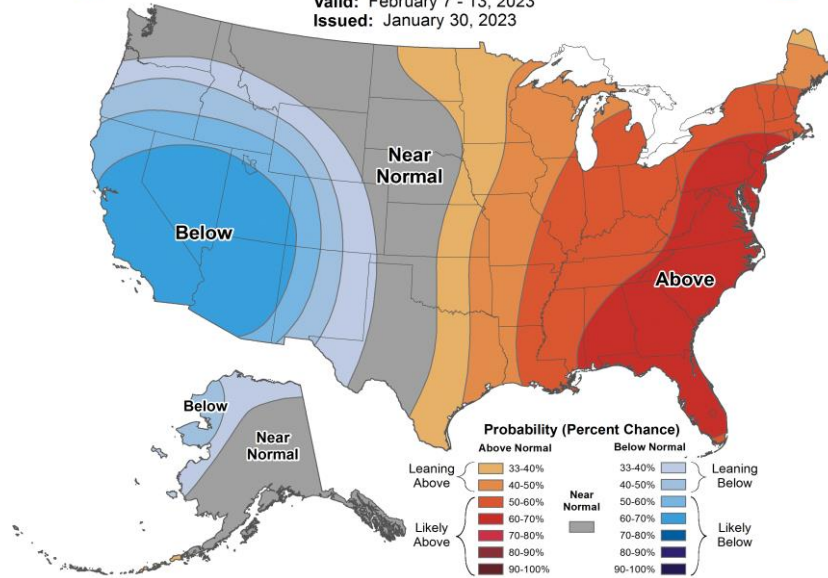
# Mean 500-hPa Height Anomaly Forecasts:



# Official Temperature & Precipitation Forecasts:

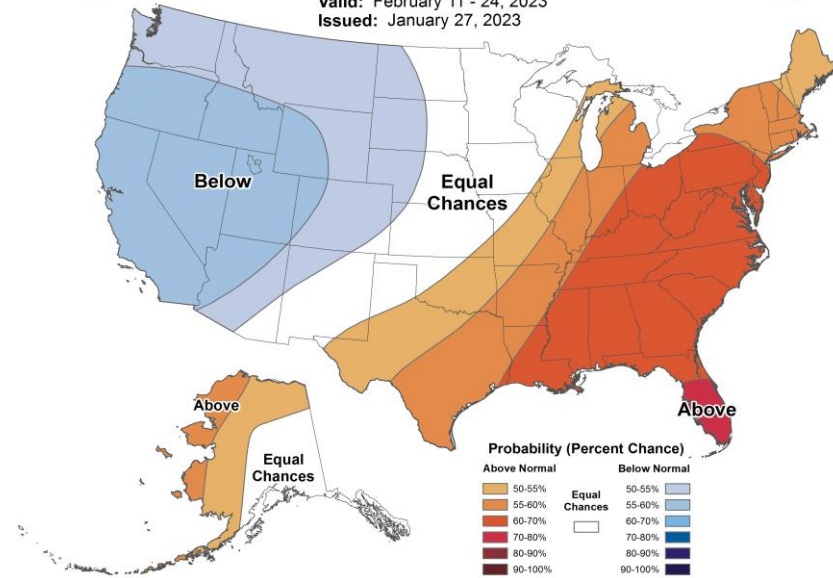
## 8-14 Day Temperature Outlook

Valid: February 7 - 13, 2023  
Issued: January 30, 2023



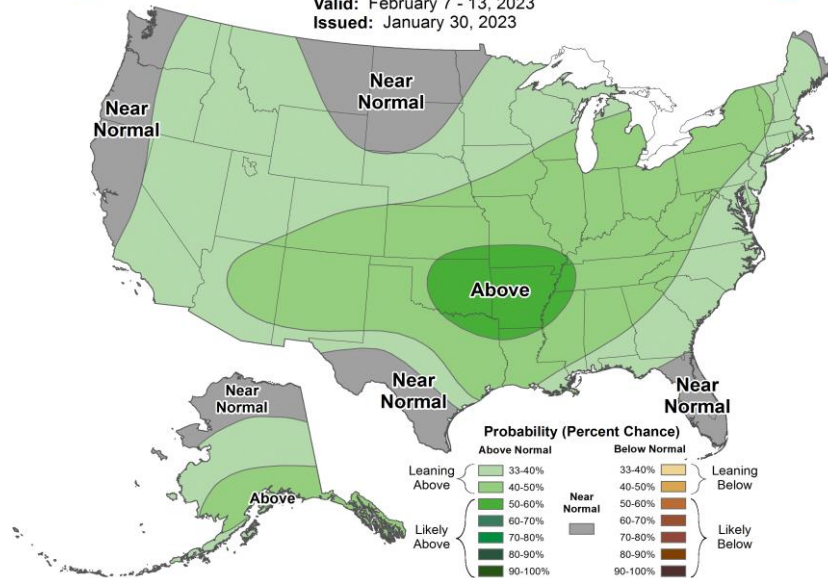
## Weeks 3-4 Temperature Outlook

Valid: February 11 - 24, 2023  
Issued: January 27, 2023



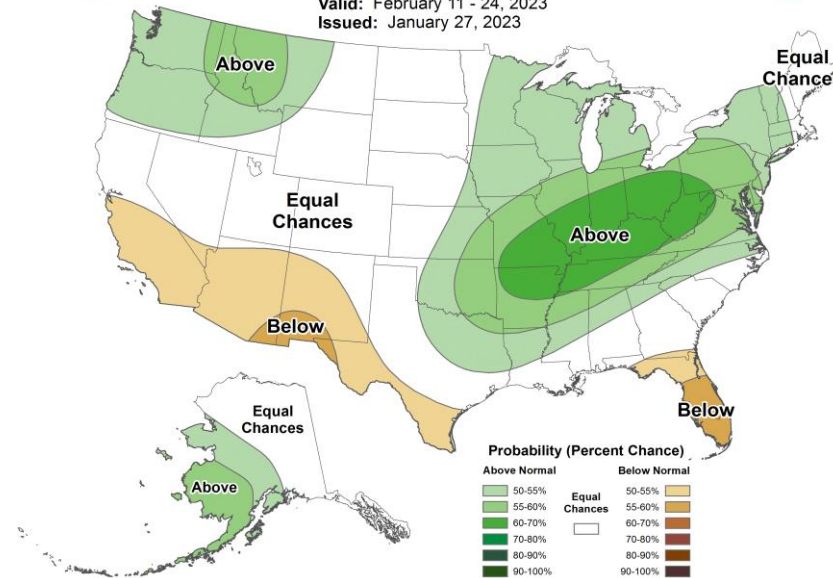
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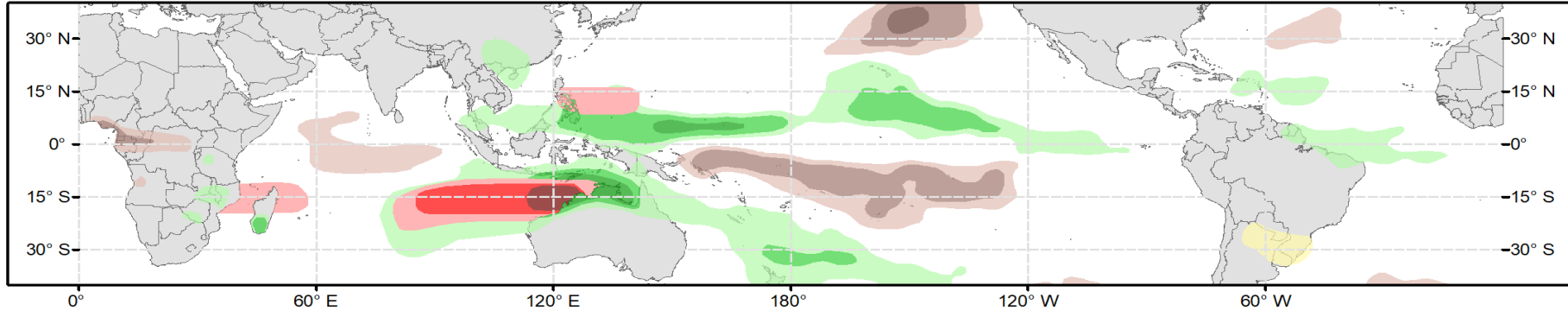
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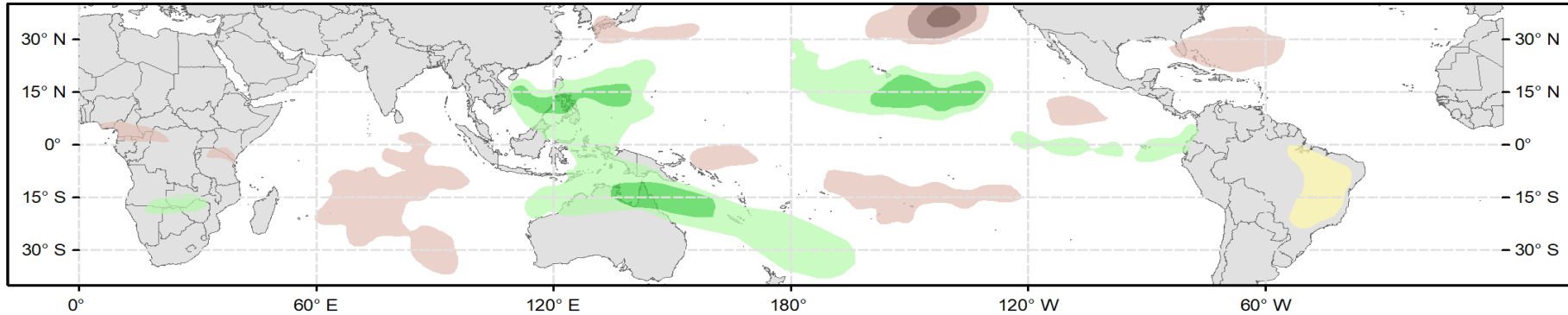
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