



# Weeks 2-3 Global Tropics Hazards Outlook

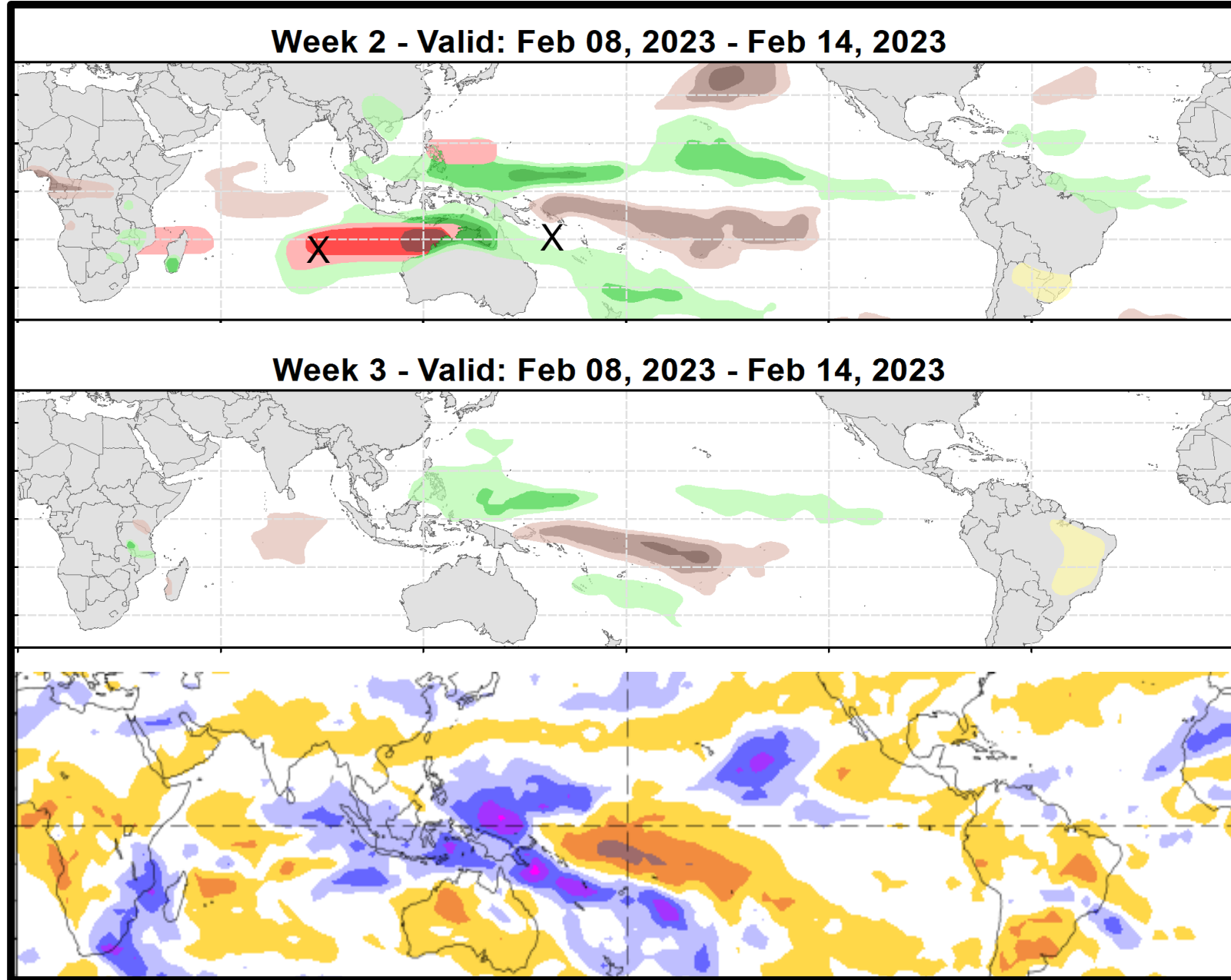
2/14/2023

Nick Novella

NWS / NCEP / Climate Prediction Center

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

- SPAC: TC Gabrielle (2/8)
- SIO: TC Dingani (2/9)



# Synopsis of Climate Modes:

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

- ENSO Alert System Status: [La Niña Advisory](#)
- ENSO-neutral conditions are expected to begin within the next couple of months, and persist through the Northern Hemisphere spring and early summer.

## **MJO and other subseasonal tropical variability:**

- Both RMM and upper-level velocity potential anomaly analyses continue to reflect an active MJO signal that has recently entered the western Pacific (phase 6).
- There is good agreement in the dynamical models favoring continued eastward propagation of the MJO into the western Hemisphere during the next two weeks, though there is increased uncertainty in regards to its coherence later in February.
- As the enhanced phase of the MJO shifts eastward, the large-scale environment is expected to become more (less) favorable for tropical cyclogenesis across the South Pacific (Indian Ocean) basins.
- Western Hemisphere MJO events historically favor increased troughing and colder temperatures emerging over eastern U.S. While this is favored to some extent (particularly later in week-2 over the Northeast) in the models, the overall pattern appears more reflective of a La Nina response over North America.

# GTH Outlook:

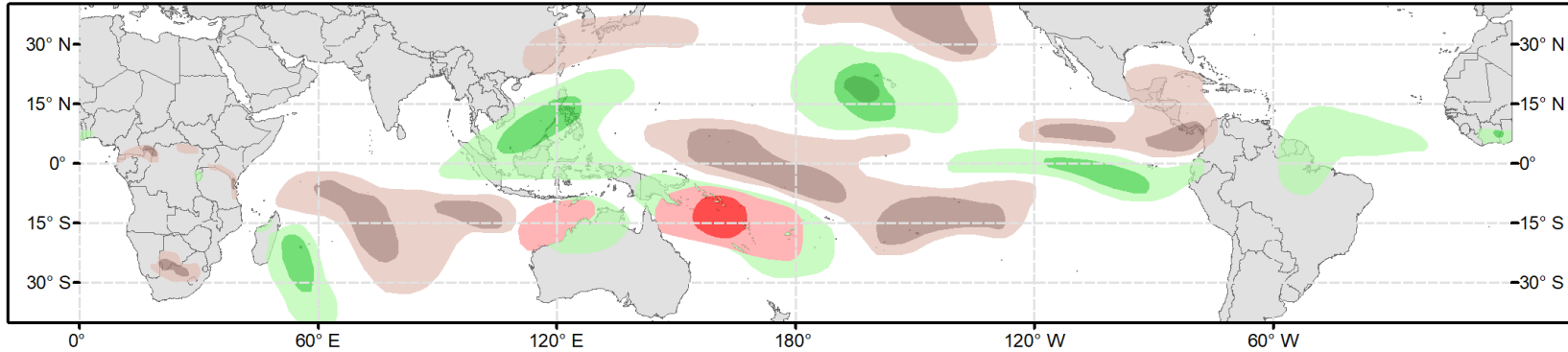


## Global Tropics Hazards Outlook

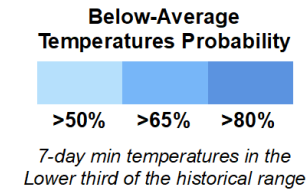
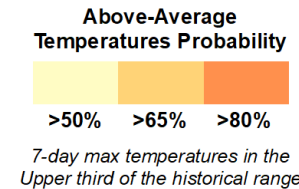
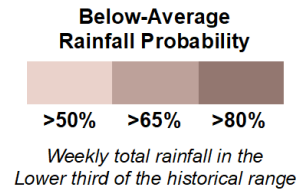
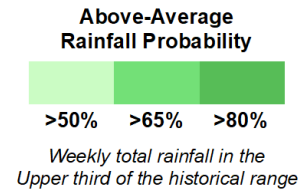
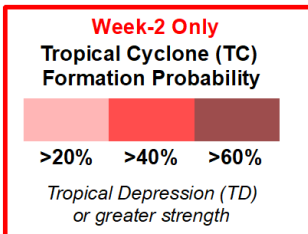
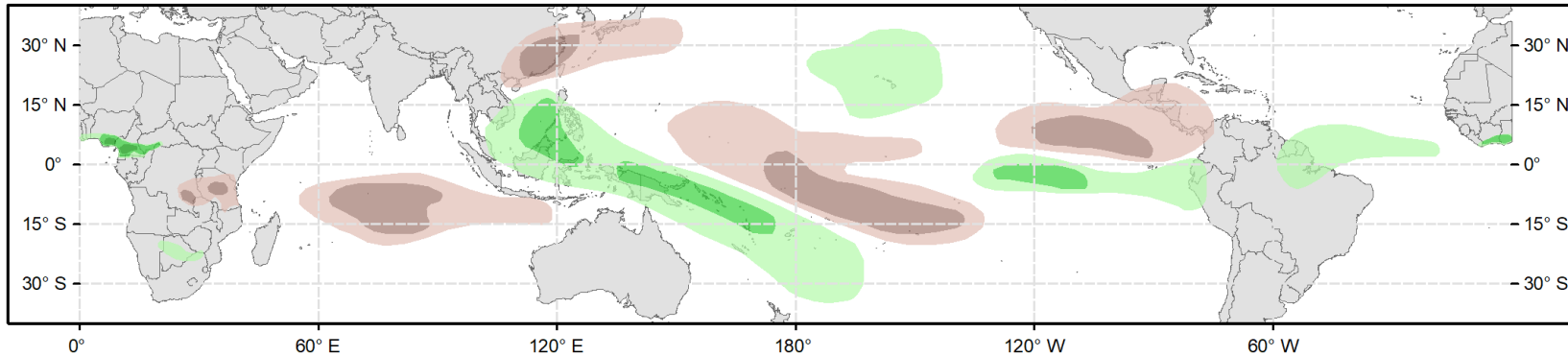
Climate Prediction Center



**Week 2 - Valid: Feb 22, 2023 - Feb 28, 2023**



**Week 3 - Valid: Mar 01, 2023 - Mar 07, 2023**

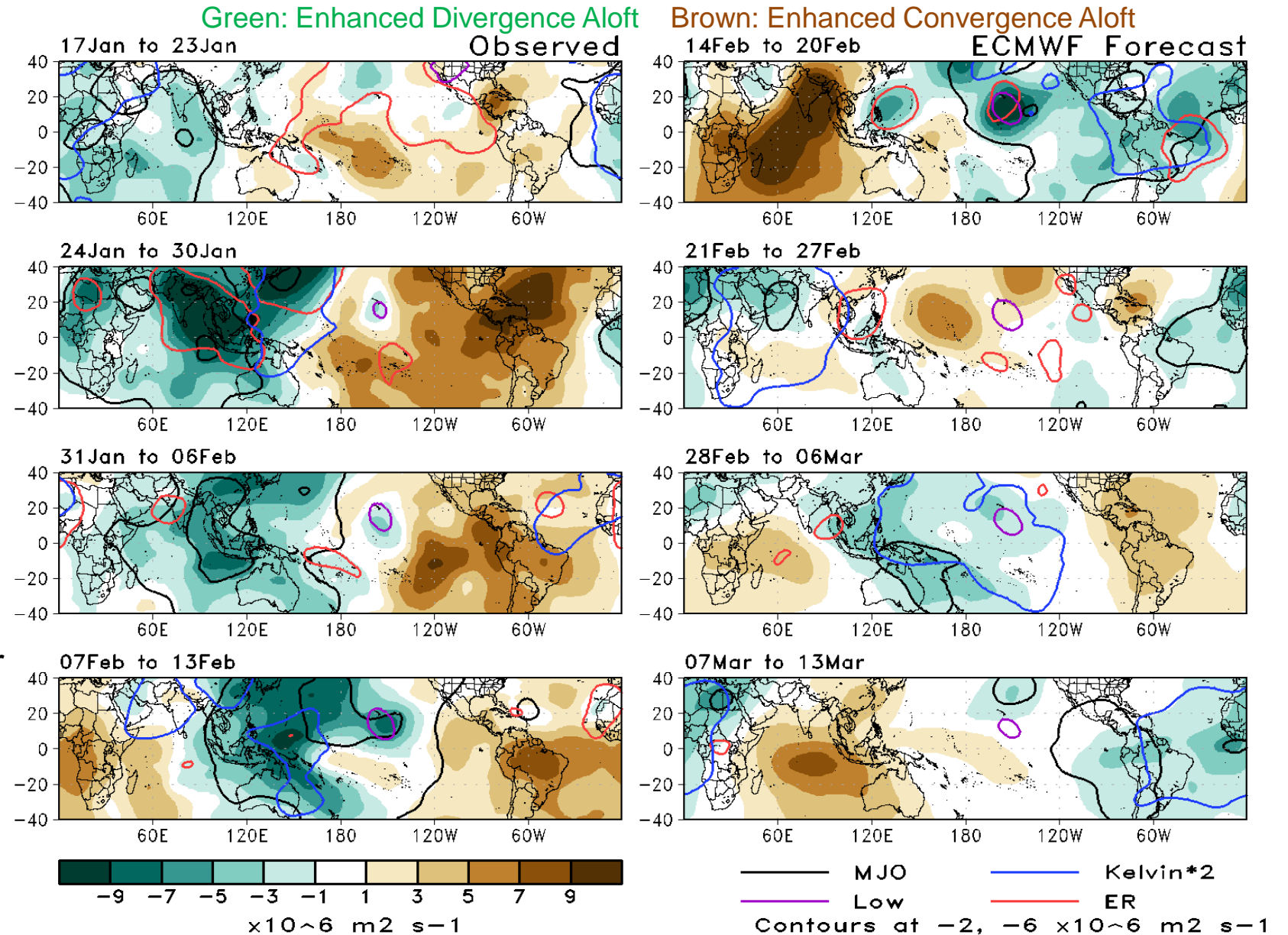


**Issued: 02/14/2023**  
**Forecaster: Novella**

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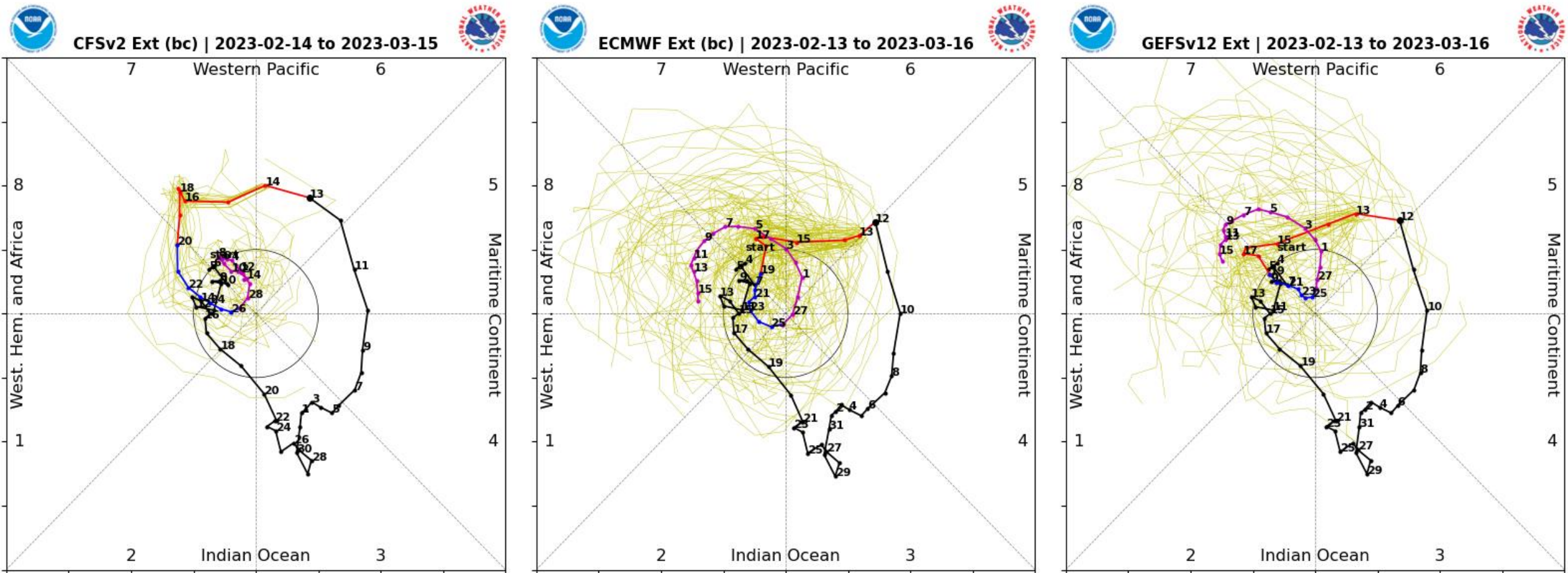
# 200-hPa Velocity Potential Anomaly Maps:

- Coherent MJO activity since January is evident in the observed velocity potential fields, with the anomalous divergence aloft focused across the western Pacific. More suppressed conditions beginning to overspread Africa and the western Indian Ocean.
- A fairly well defined wave-1 pattern is favored during week-1, but begins to break down later in February possibly due to interference with other modes of variability.



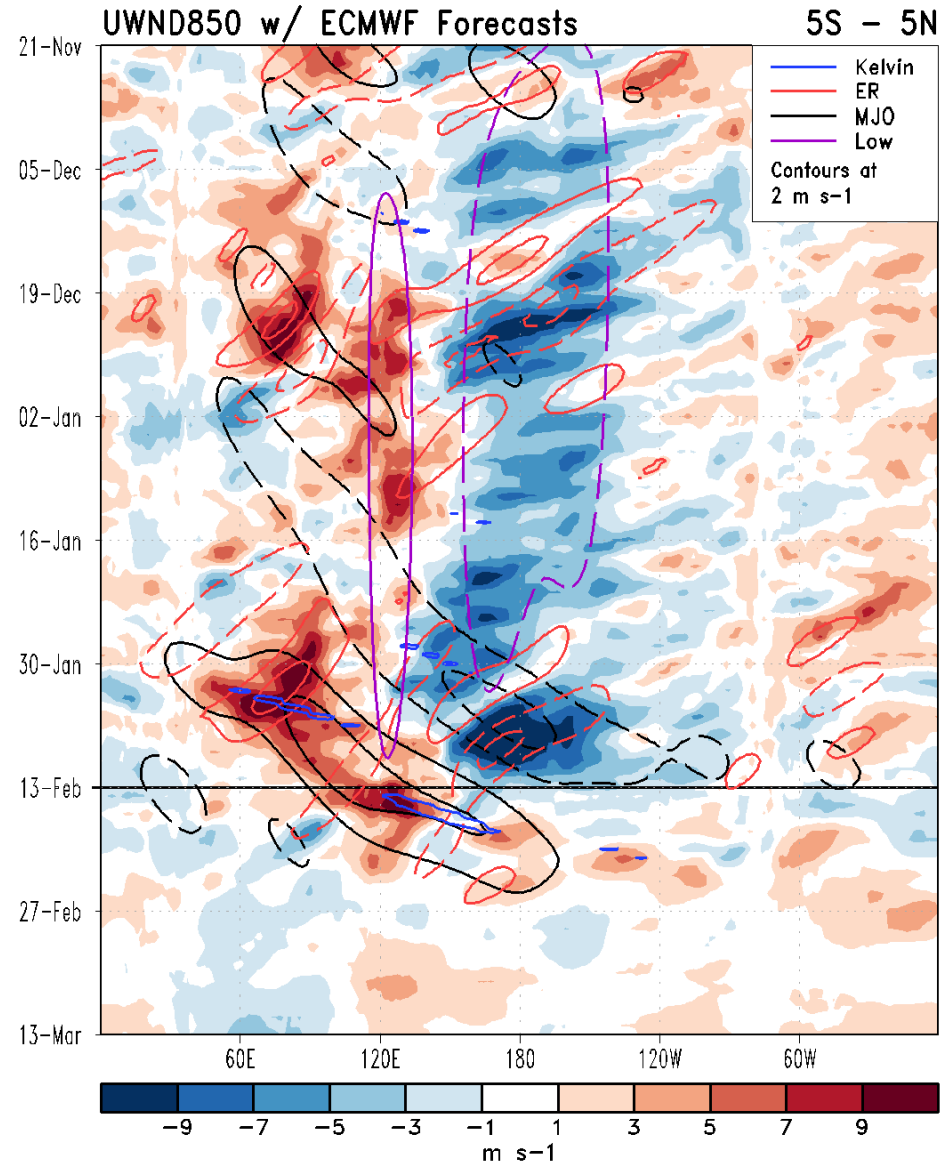
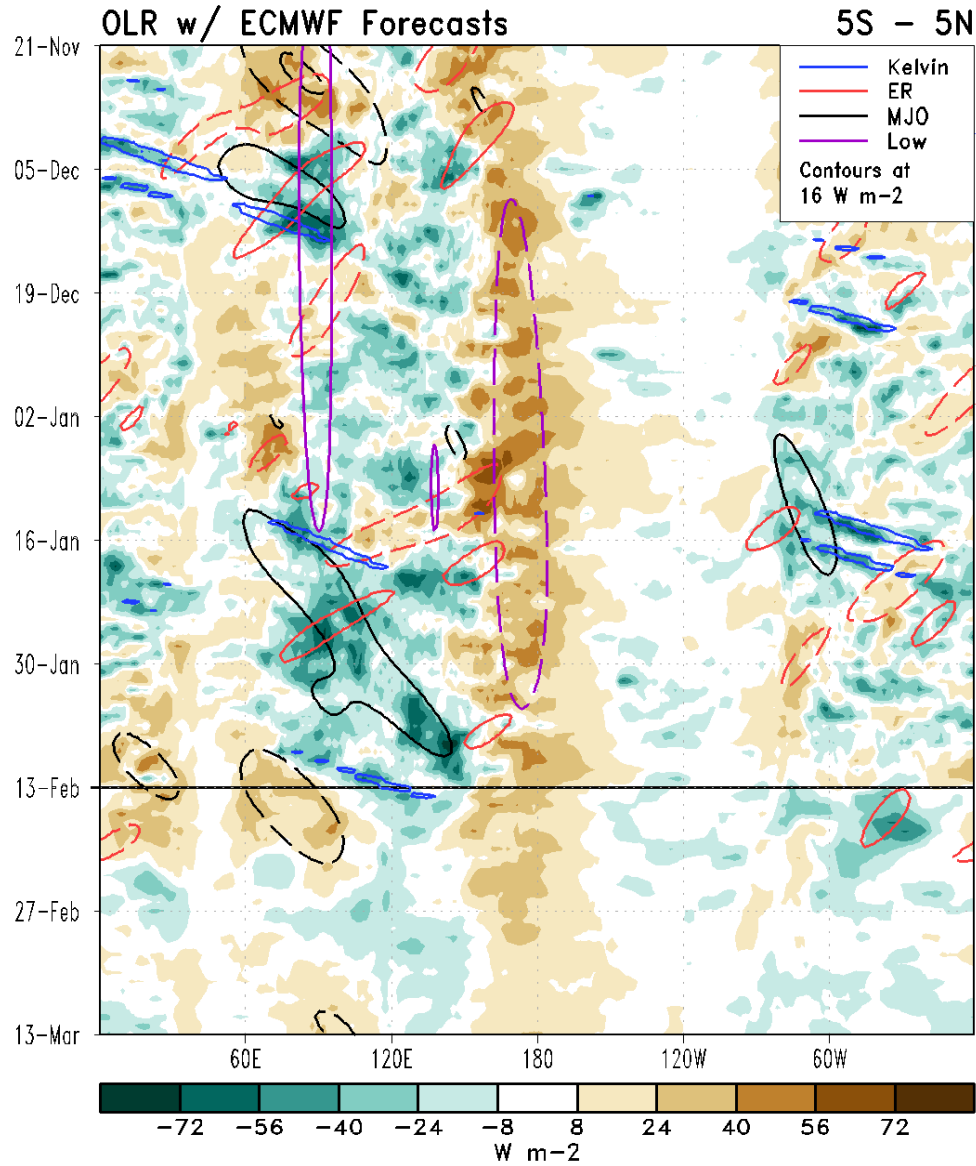


# RMM Index Observations & Forecasts:



- Similar to velocity potential forecasts, RMM forecasts generally favor continued eastward propagation of the MJO over the western Pacific during week-1, while weakening over the western hemisphere during week-2.
- High ensemble spread is contributing to increased uncertainty in the outlook, though several ensemble members (as well as non-bias corrected mean solutions) favor a more coherent MJO later in February.

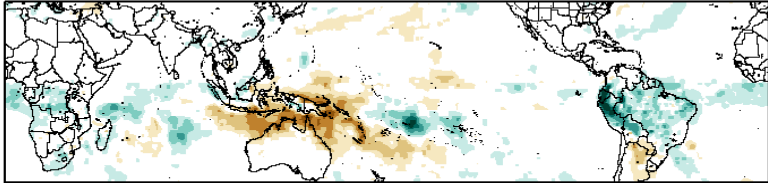
# Outgoing Longwave Radiation (OLR) Anomaly Time/Lon Plots:



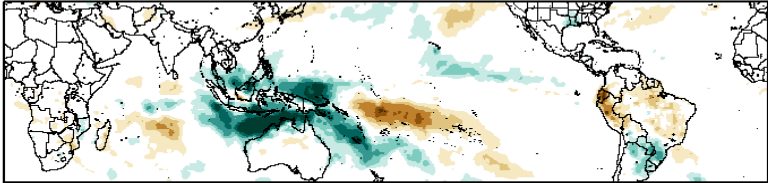
# Historical Precipitation Anomalies By MJO Phase:

JFM MJO Composite: GPCP1DD (mm/day)

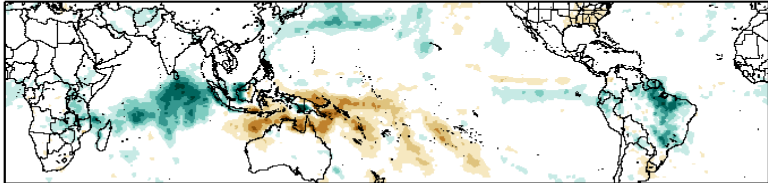
Phase 1



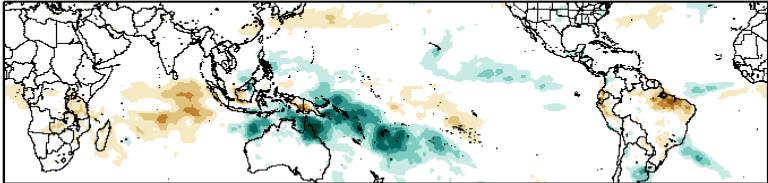
Phase 5



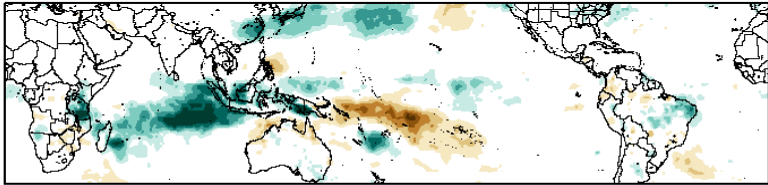
Phase 2



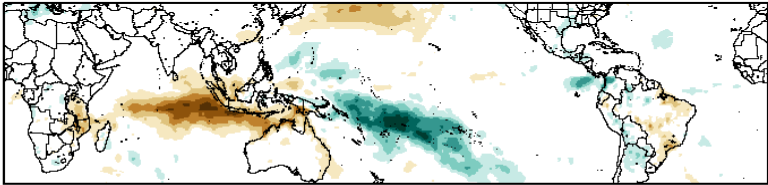
Phase 6



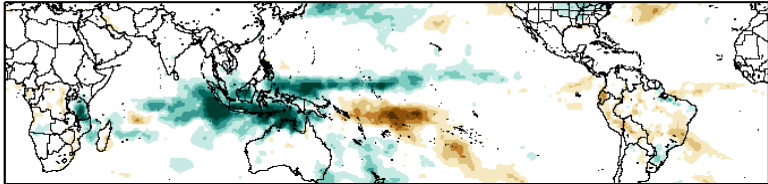
Phase 3



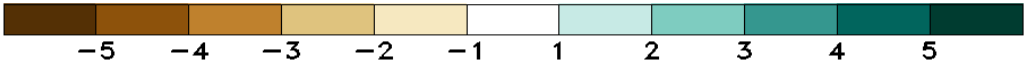
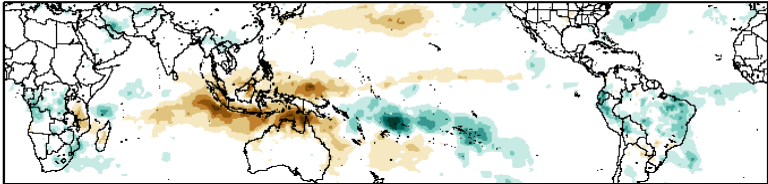
Phase 7



Phase 4



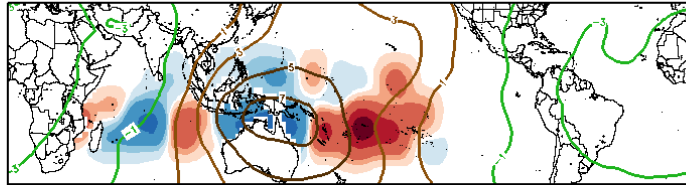
Phase 8



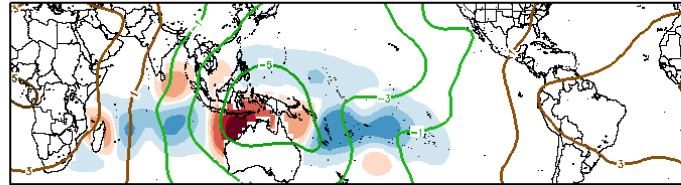


# Historical TC Origin Anomalies By MJO Phase & Weeks 2+3 Genesis Climo:

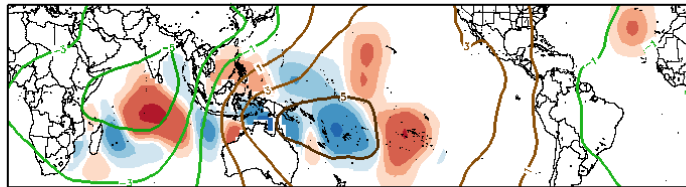
JFM MJO Composite: Mean TC Origin Density Anomaly ( $\#TCs/277km^2*100$ )  
w/ JFM CHI200 ( $\times 10^{-6} m^2 s^{-1}$ ) / Contours every  $2 \times 10^{-6} m^2 s^{-1}$



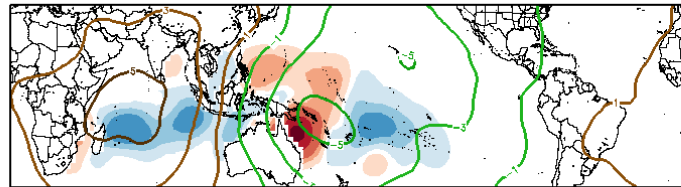
Phase 1



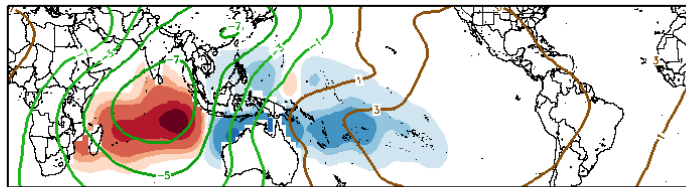
Phase 5



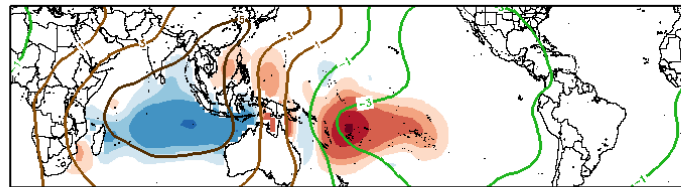
Phase 2



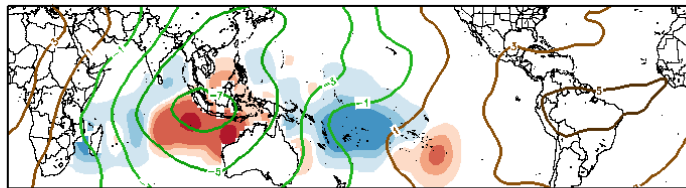
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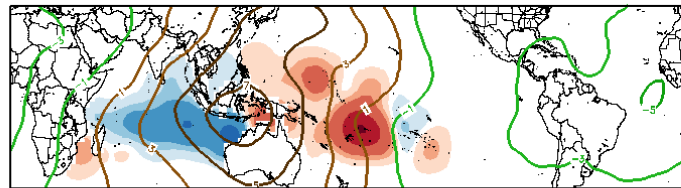
Phase 3



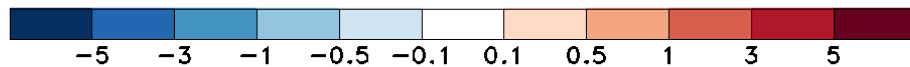
Phase 7



Phase 4

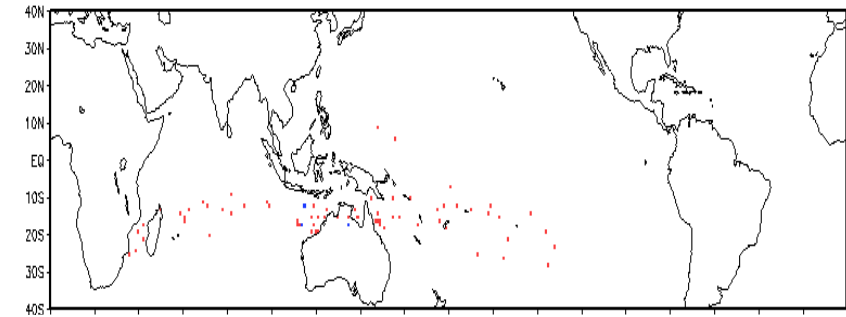


Phase 8



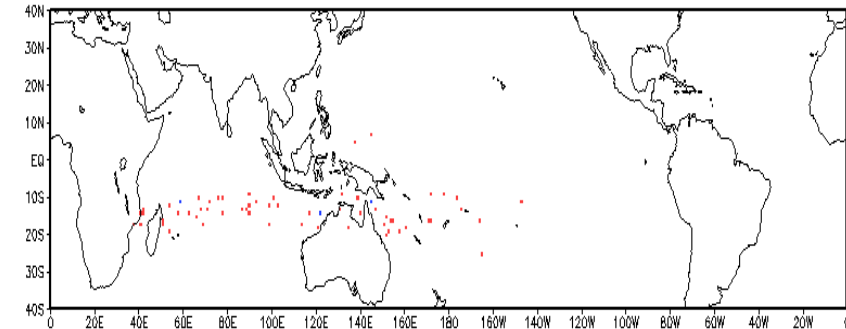
Observed TC Genesis, 1979–2021

7-day Period 0222 to 0228



Observed TC Genesis, 1979–2021

7-day Period 0301 to 0307

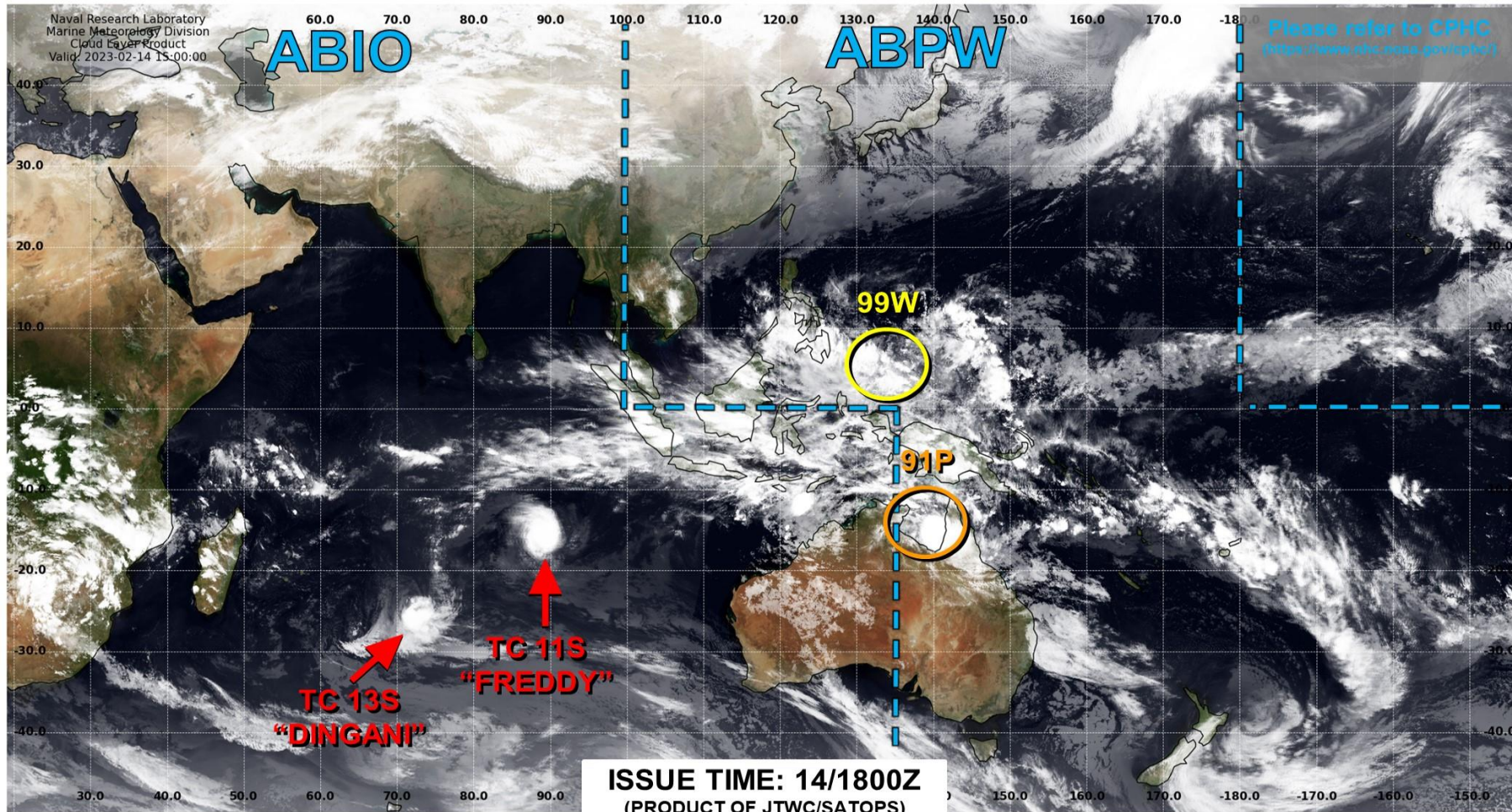


\*Experimental\*

# 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)

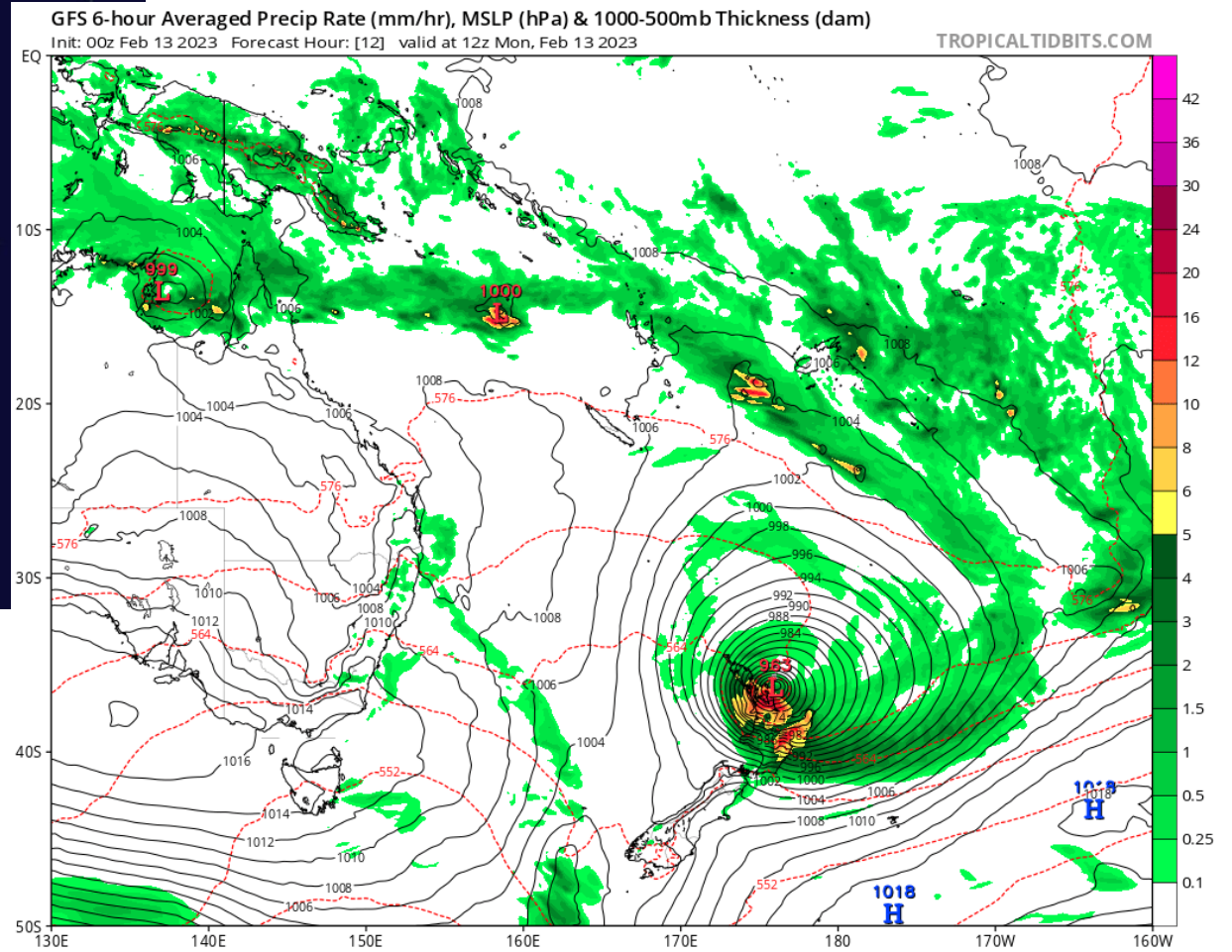
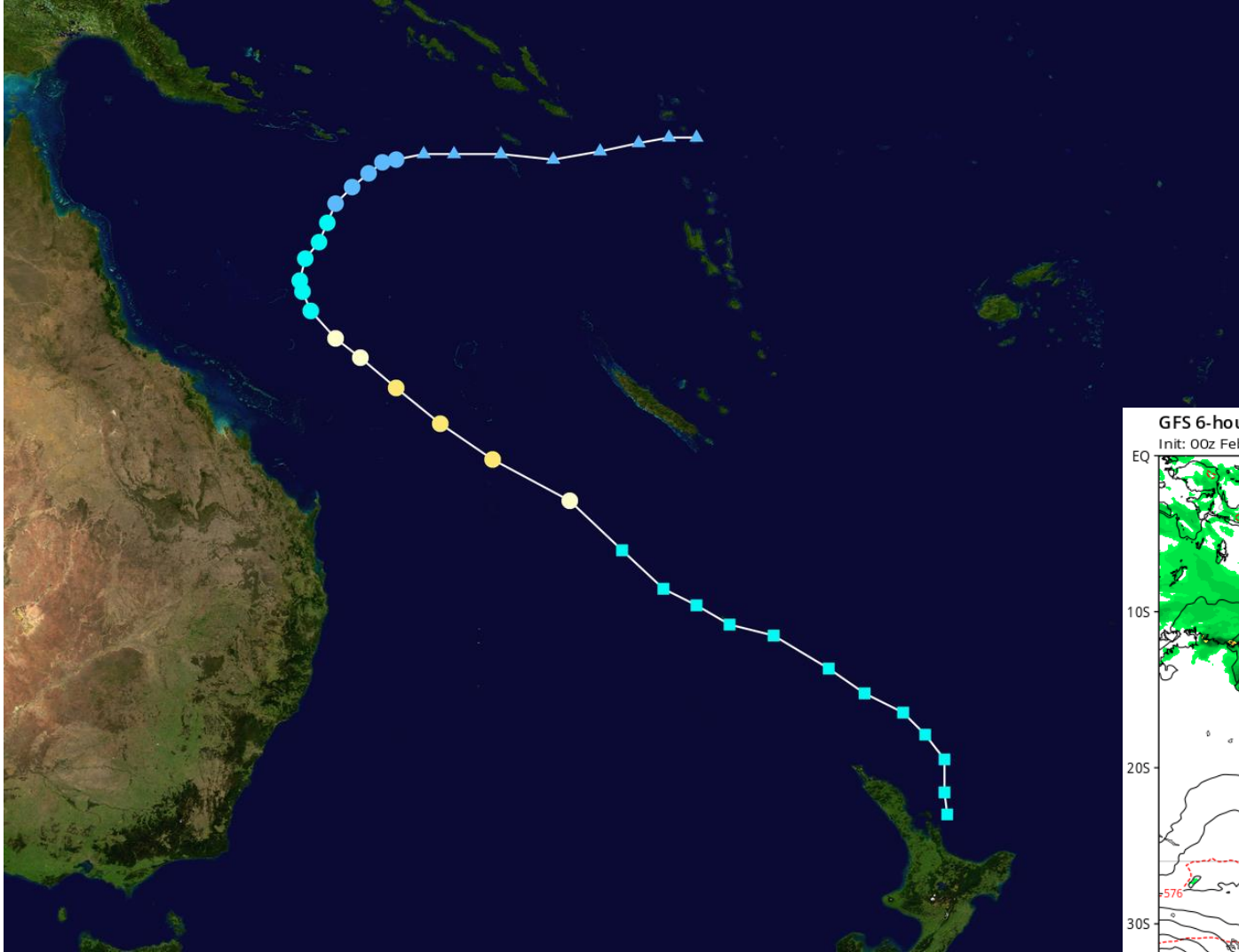


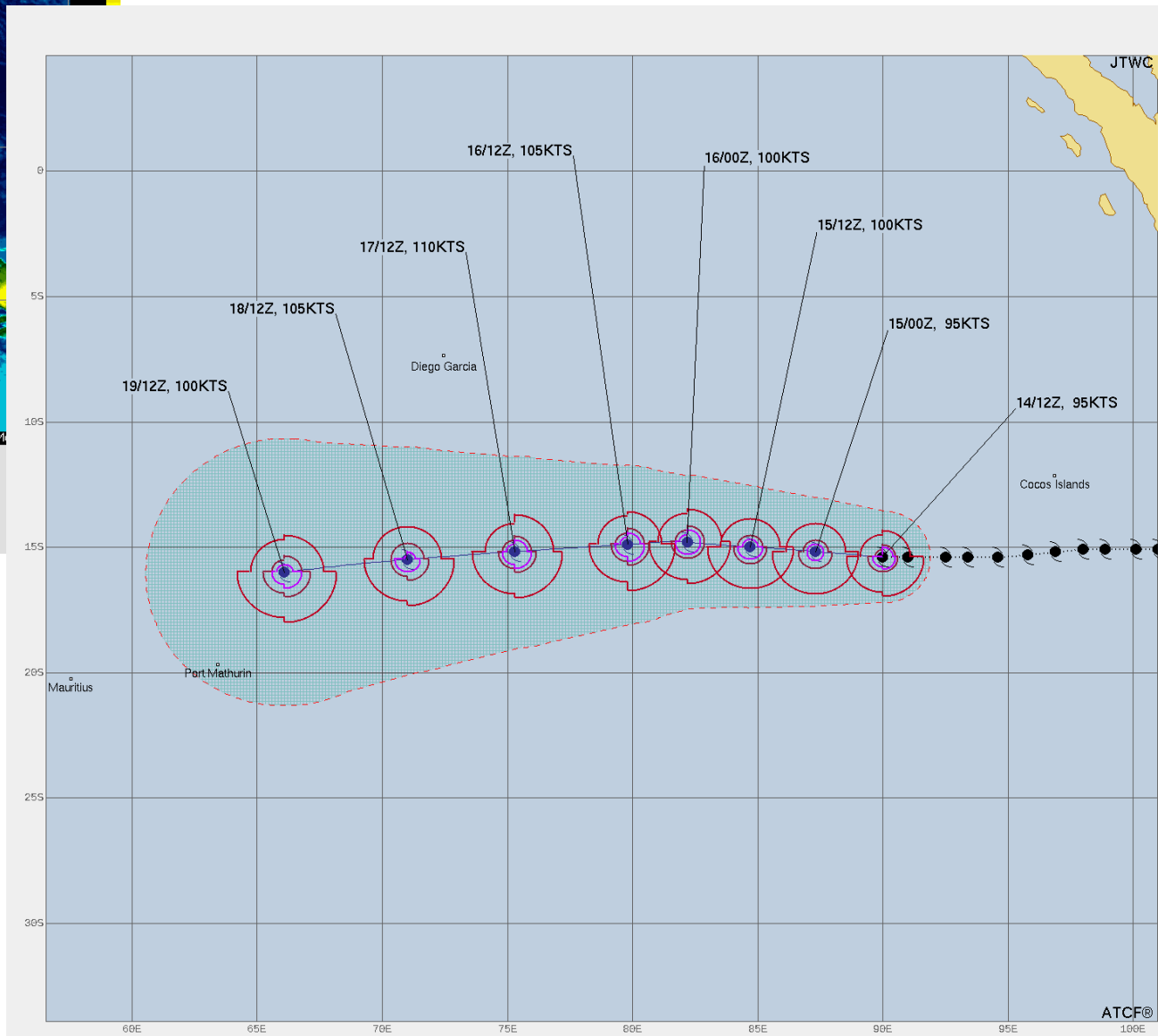
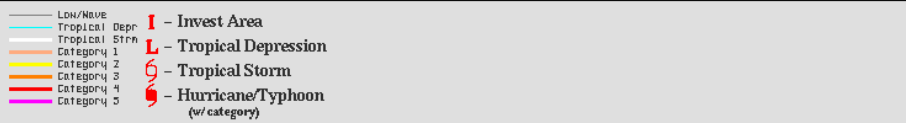
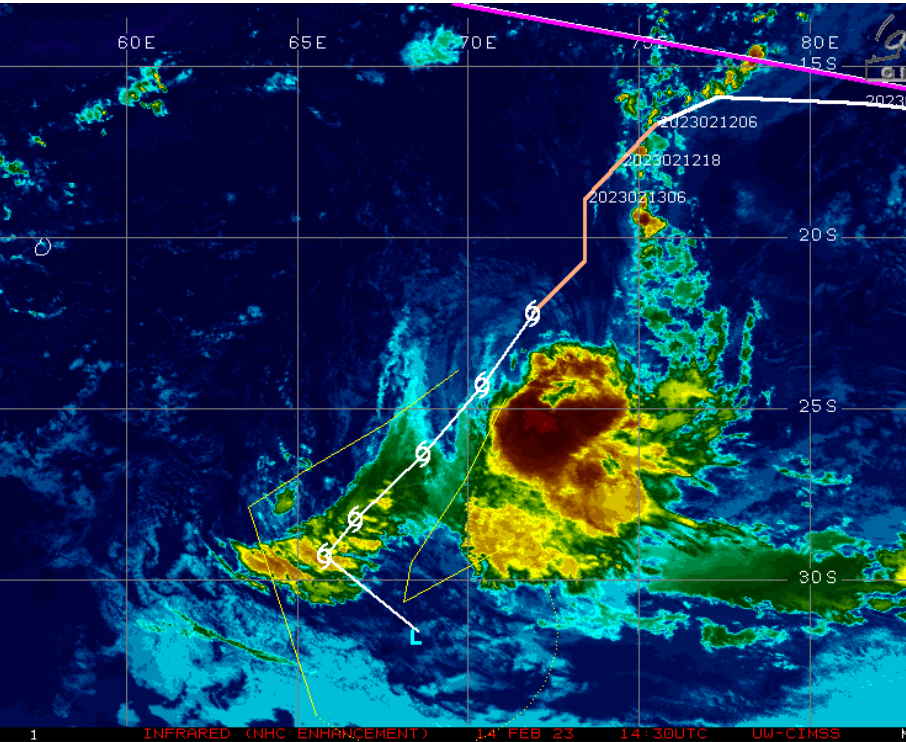
Monitoring for potential transition to TC. Invest label color denotes tropical transition probability



Tropical Cyclone (Reference Warning)







**TROPICAL CYCLONE 115 (FREDDY) WARNING #24**  
 WTXS31 PGTW 141500  
 141200Z POSIT: NEAR 15.4S 90.0E  
 MOVING 270 DEGREES TRUE AT 10 KNOTS  
 MAXIMUM SIGNIFICANT WAVE HEIGHT: 32 FEET  
 14/12Z, WINDS 095 KTS, GUSTS TO 115 KTS  
 15/00Z, WINDS 095 KTS, GUSTS TO 115 KTS  
 15/12Z, WINDS 100 KTS, GUSTS TO 125 KTS  
 16/00Z, WINDS 100 KTS, GUSTS TO 125 KTS  
 16/12Z, WINDS 105 KTS, GUSTS TO 130 KTS  
 17/12Z, WINDS 110 KTS, GUSTS TO 135 KTS  
 18/12Z, WINDS 105 KTS, GUSTS TO 130 KTS  
 18/12Z, WINDS 100 KTS, GUSTS TO 125 KTS

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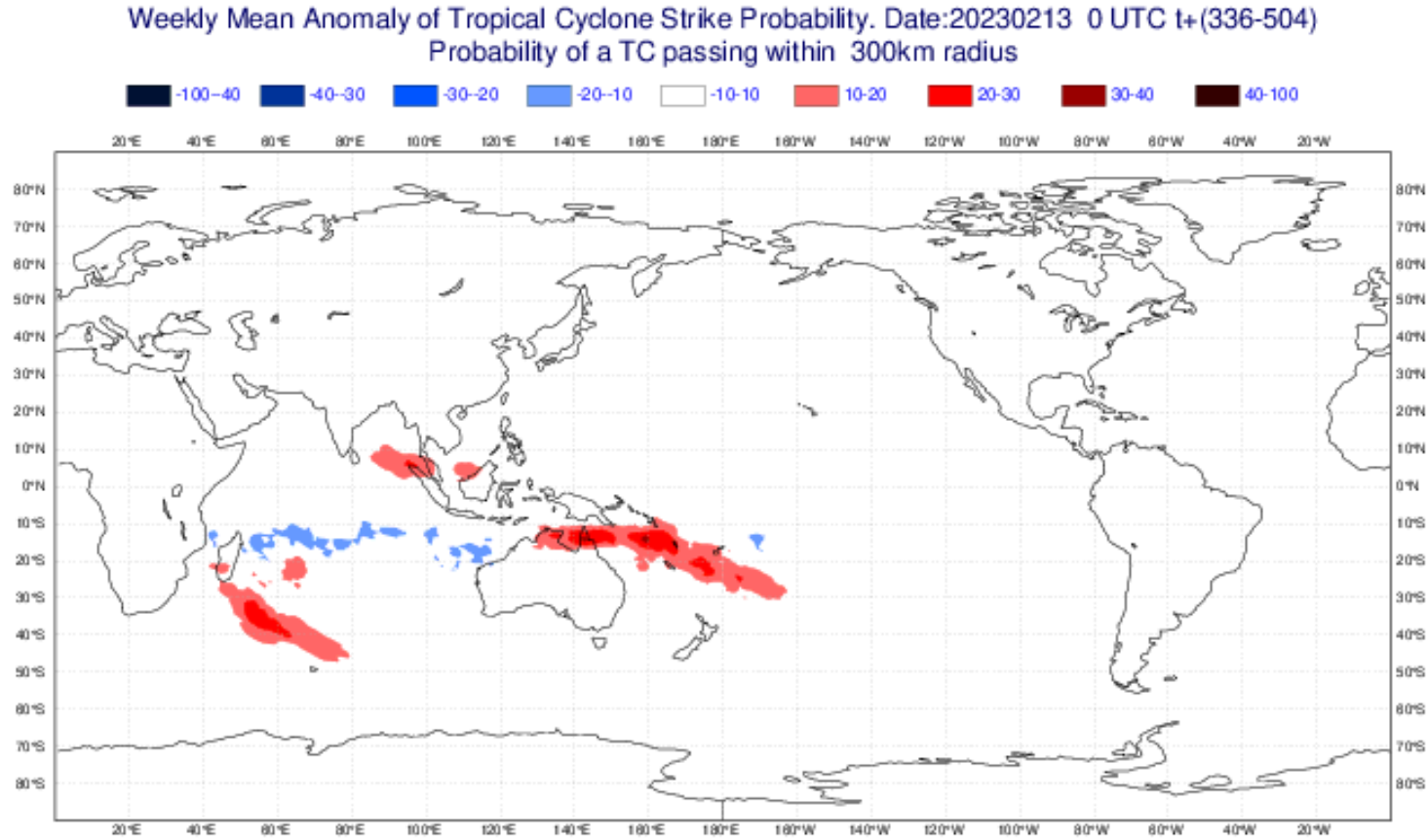
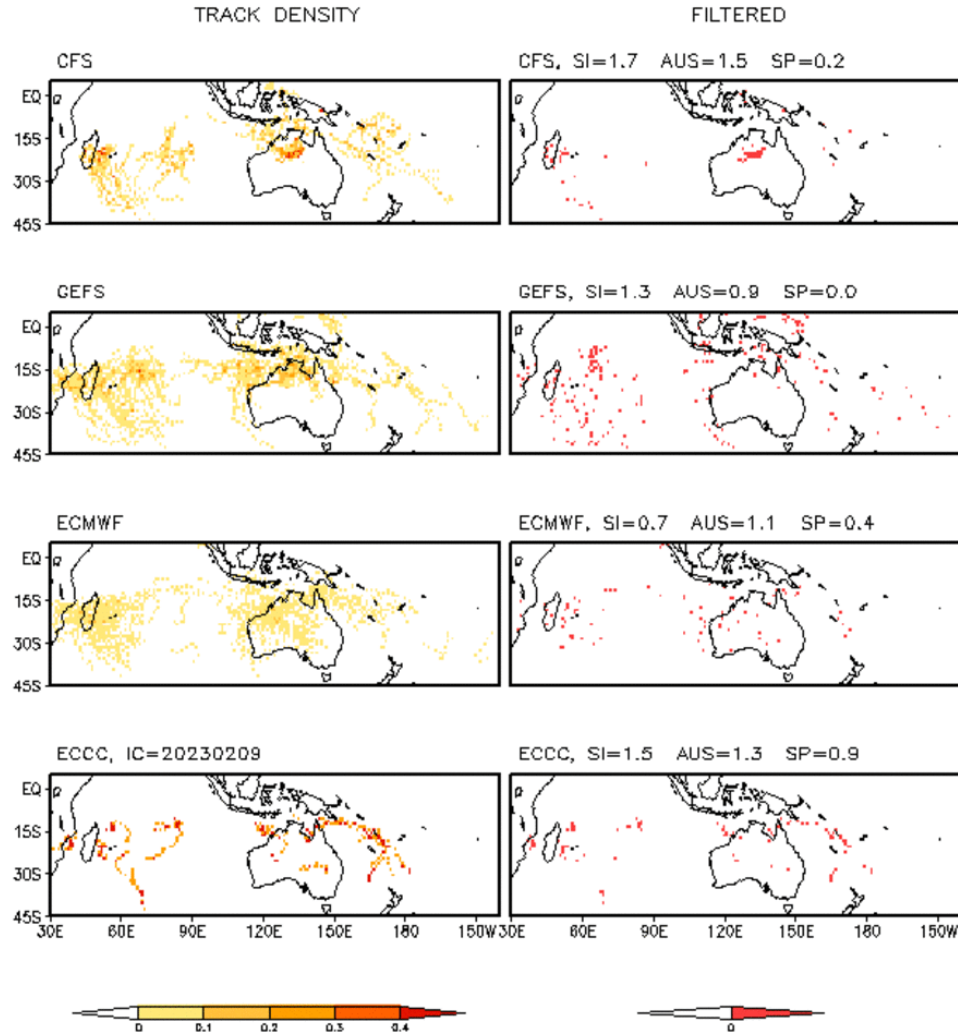
OPA TO: NM DTG  
 PORT\_MATHURIN 270 02/19/12Z

○ LESS THAN 34 KNOTS  
 ○ 34-63 KNOTS  
 ○ MORE THAN 63 KNOTS  
 - FORECAST CYCLONE TRACK  
 - PAST CYCLONE TRACK  
 - DENOTES 34 KNOT WIND DANGER AREA/USN SHIP AVOIDANCE AREA  
 ○ FORECAST 34/50/64 KNOT WIND RADII (WINDS VALID OVER OPEN OCEAN ONLY)



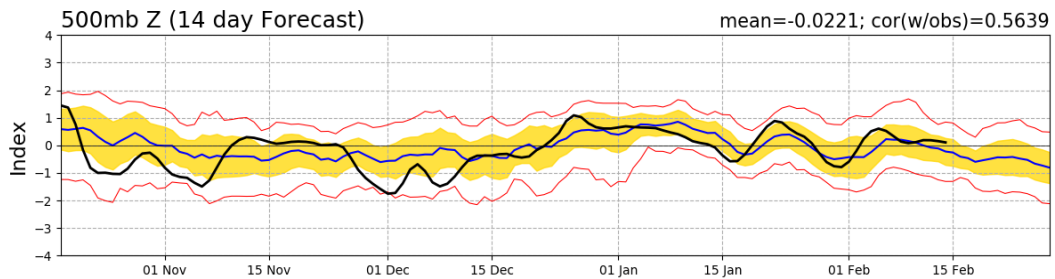
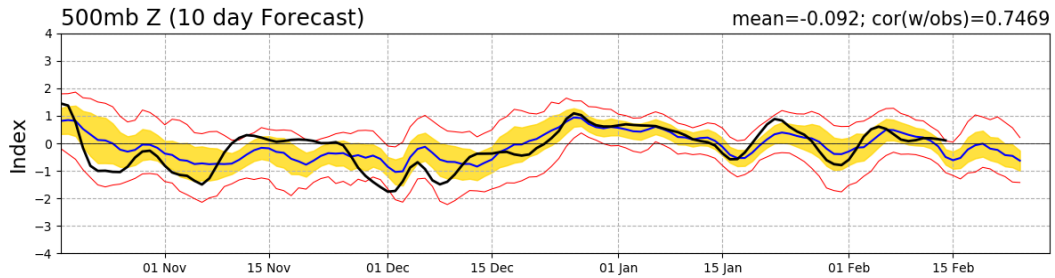
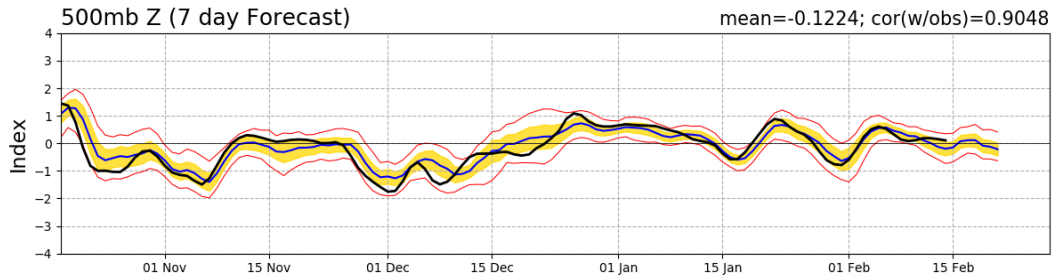
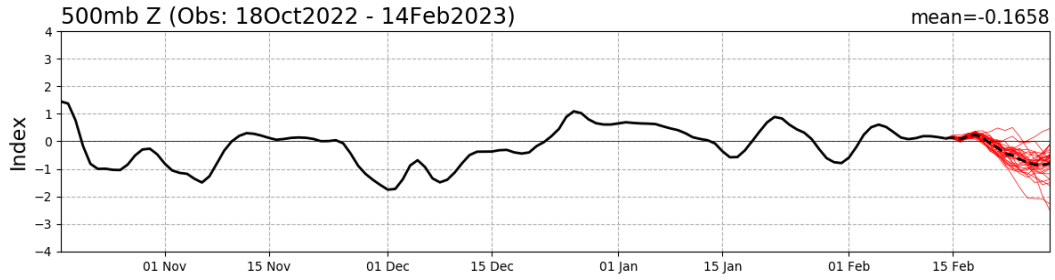
# Multi-Model TC Track Probabilities/Densities: Week-2

Storm Track Density Distribution, IC=20230213  
Week 2 Forecast: 0222-0228

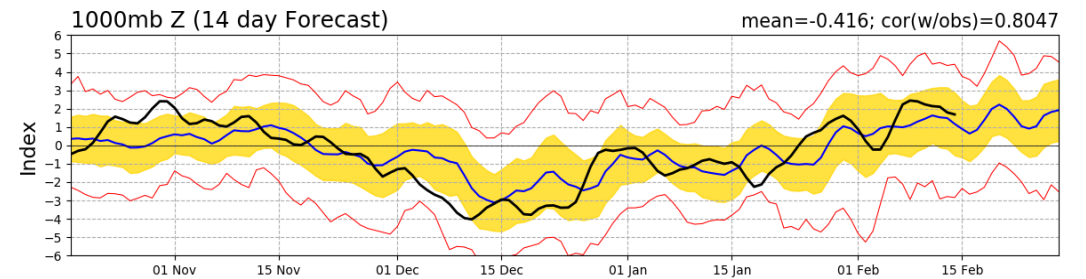
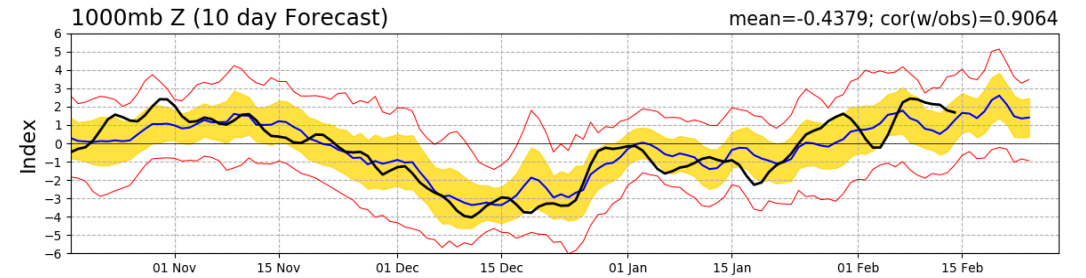
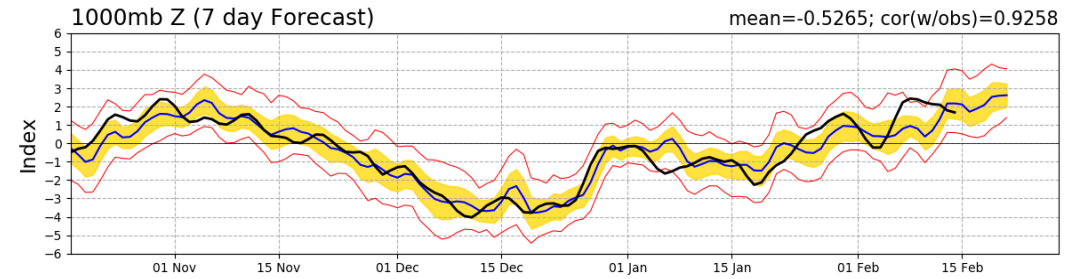
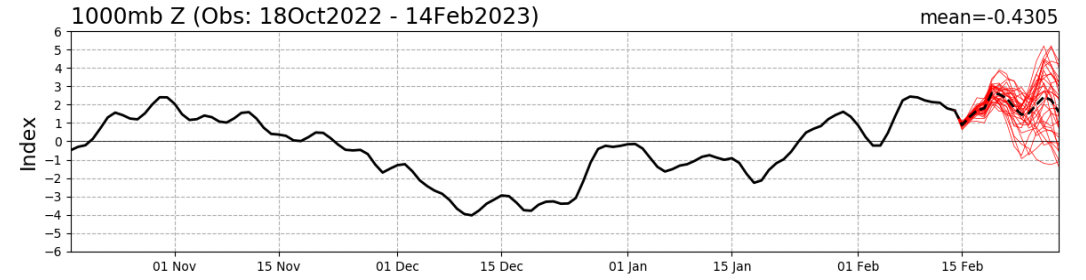


# Teleconnection Indices: PNA / AO:

## PNA Index: Observed & GEFS Forecasts



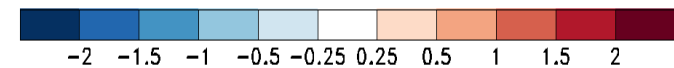
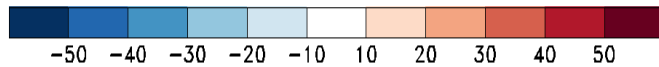
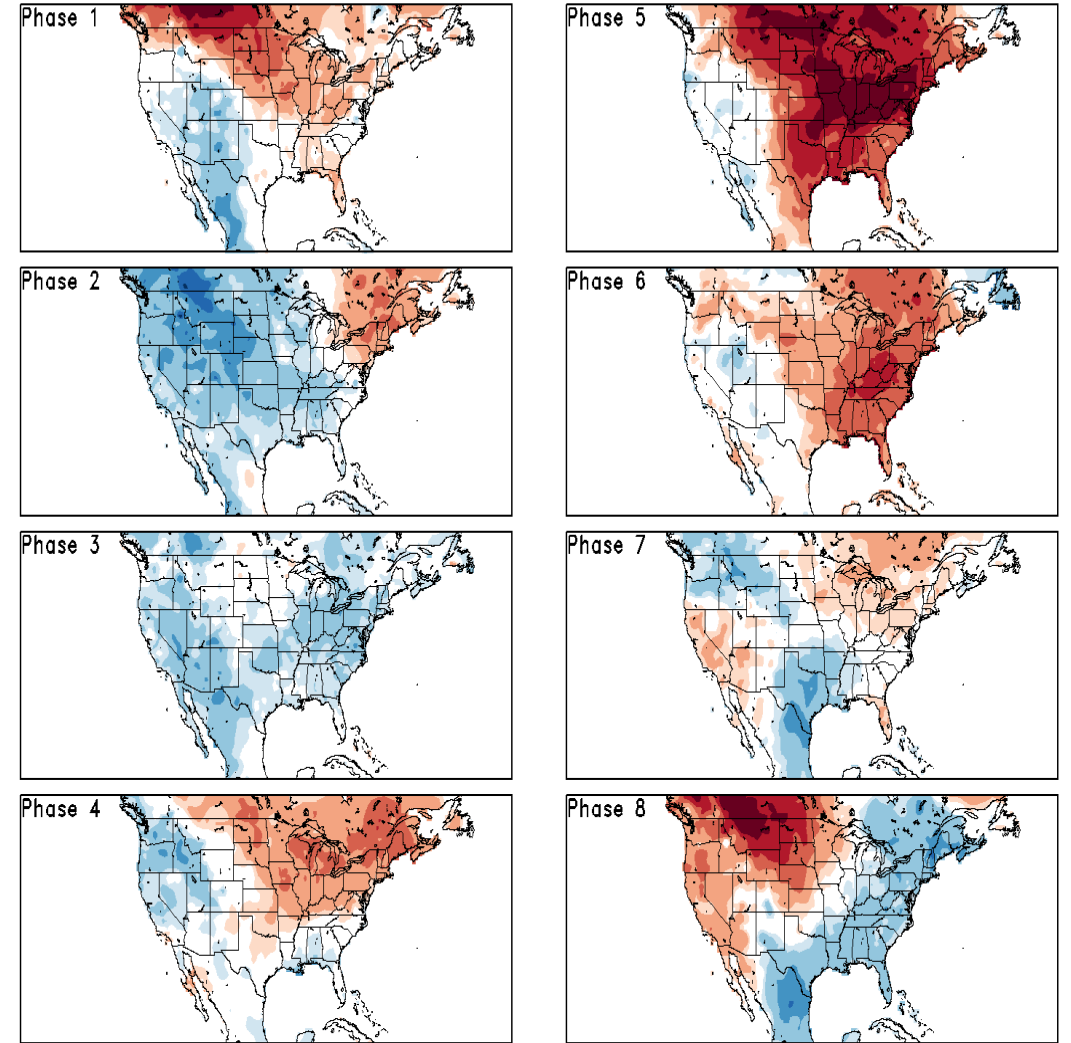
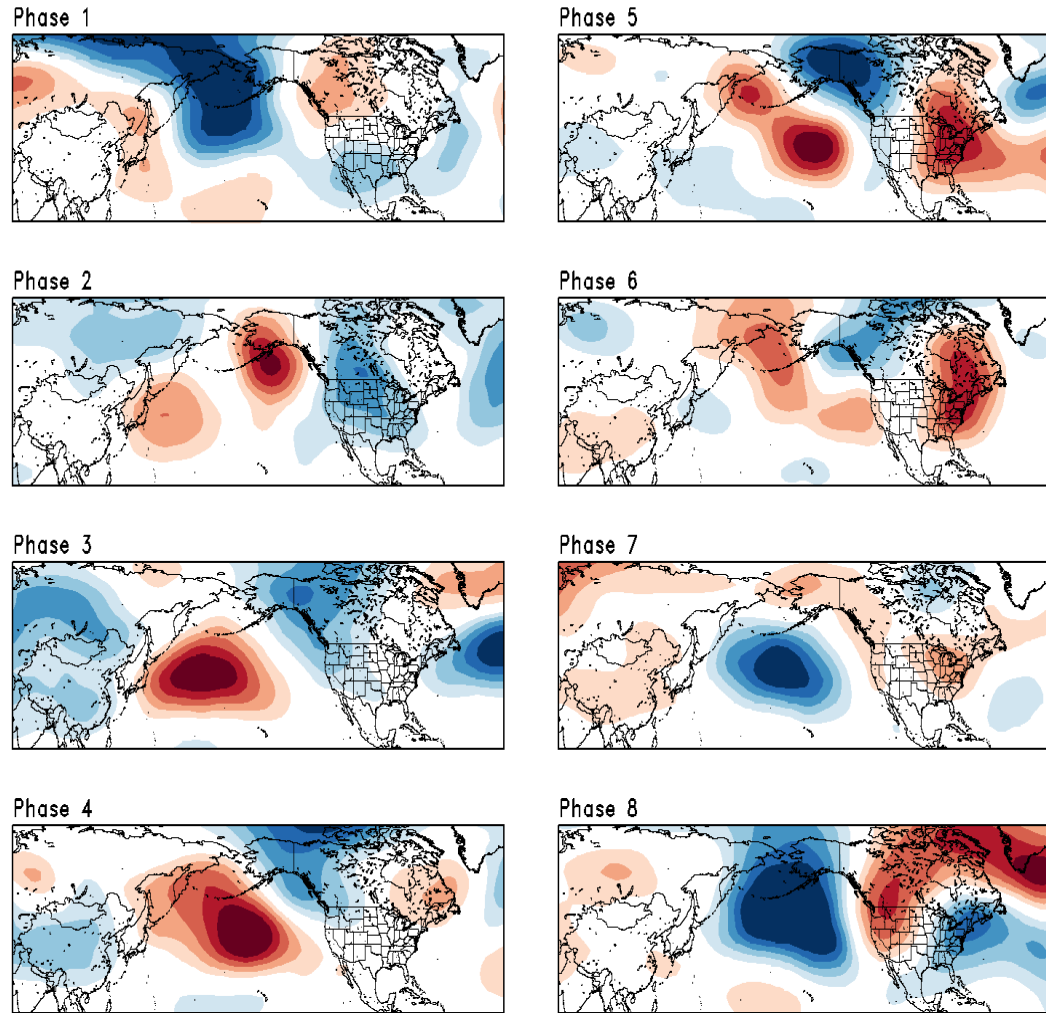
## AO Index: Observed & GEFS Forecasts



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

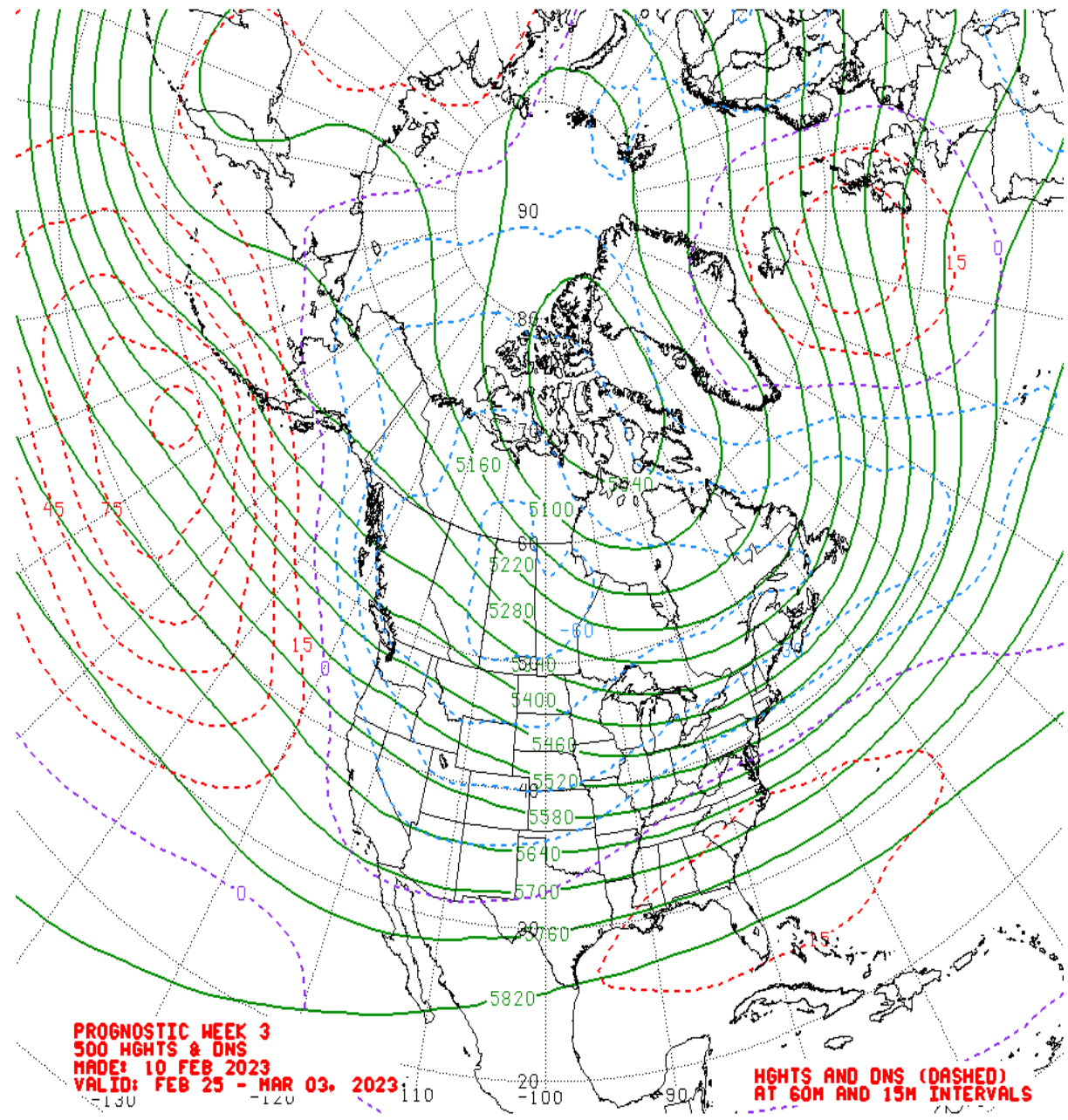
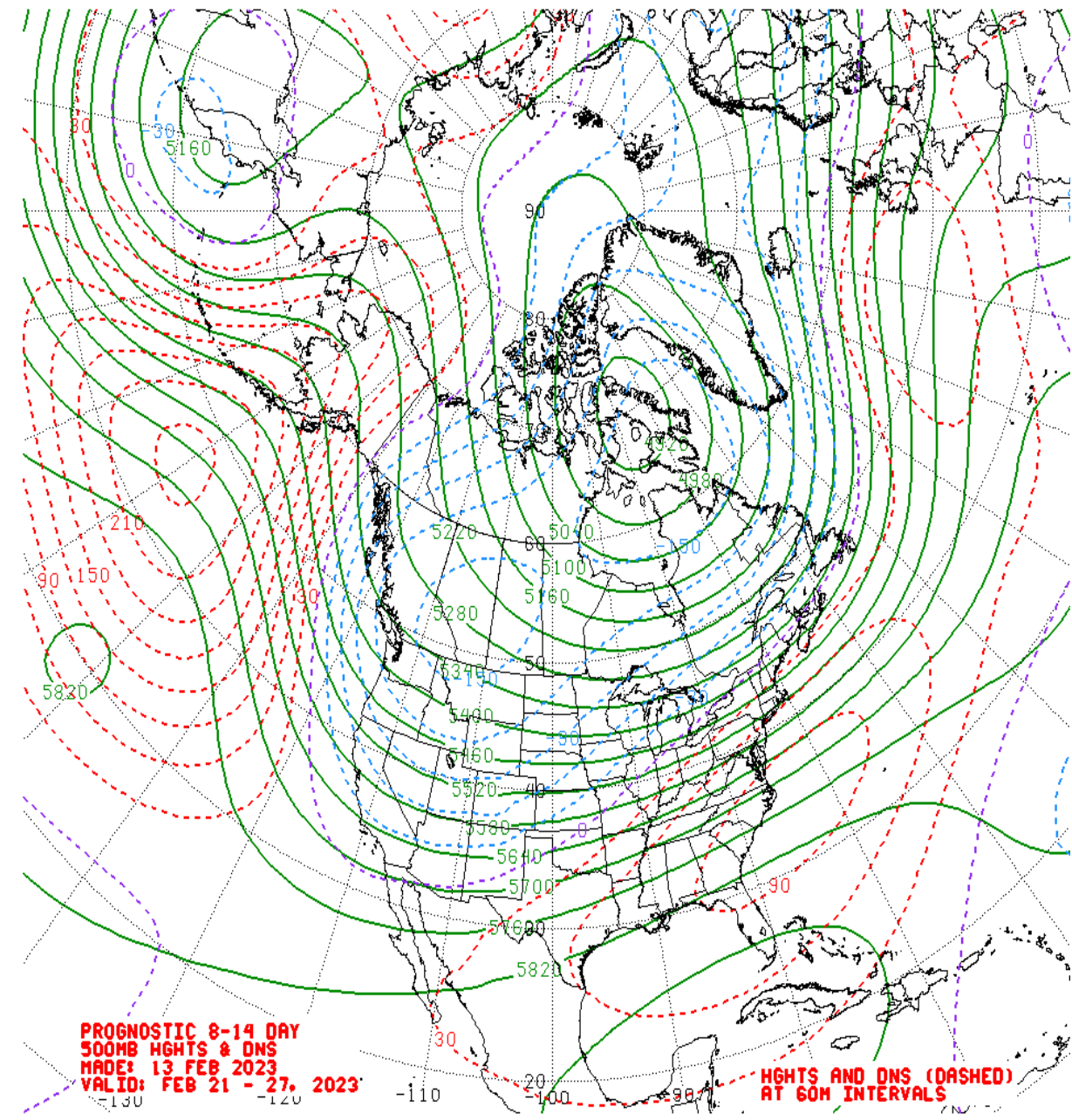
JFM MJO Composite: CDAS 500-hPa Height (m)

JFM MJO Composite: GLBT (degC)





# Mean 500-hPa Height Anomaly Forecasts:

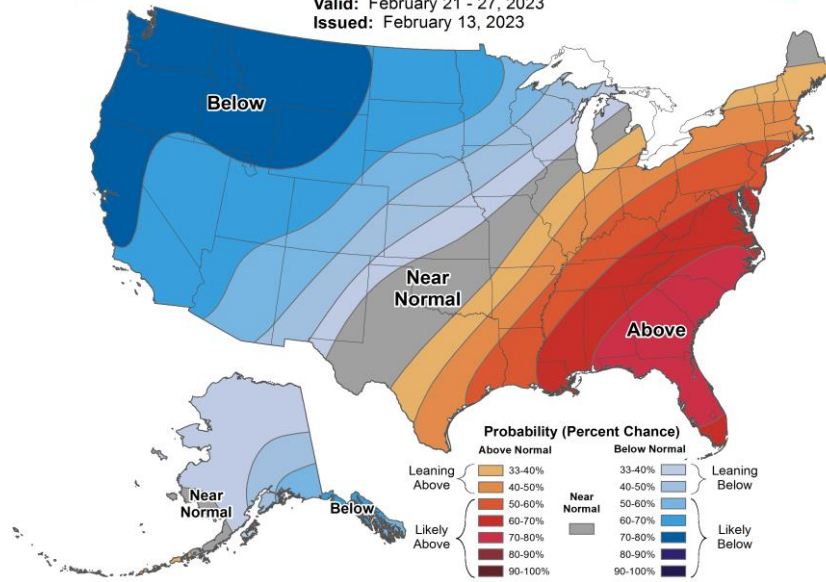




# Official Temperature & Precipitation Forecasts:

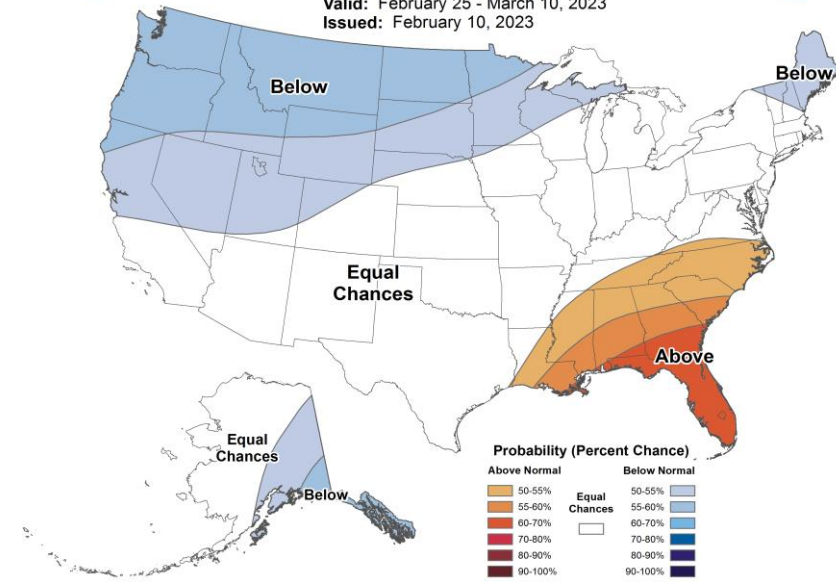
## 8-14 Day Temperature Outlook

Valid: February 21 - 27, 2023  
Issued: February 13, 2023



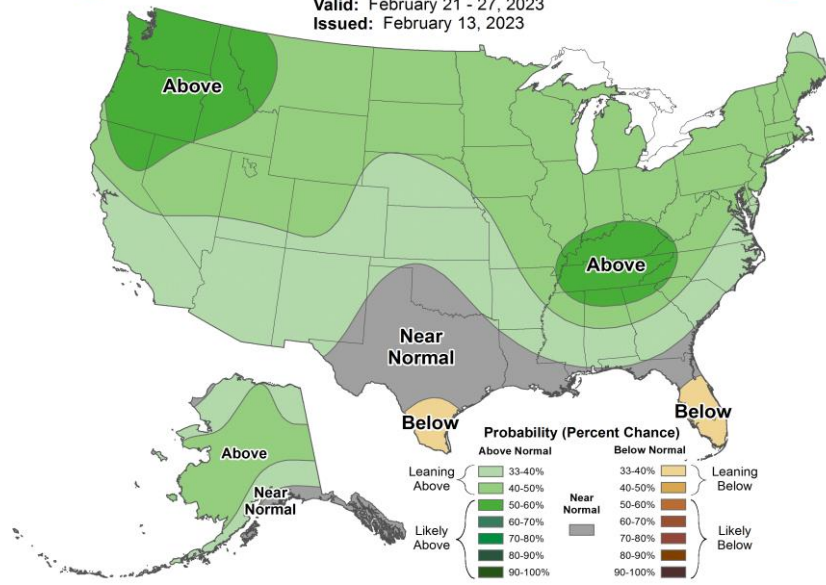
## Weeks 3-4 Temperature Outlook

Valid: February 25 - March 10, 2023  
Issued: February 10, 2023



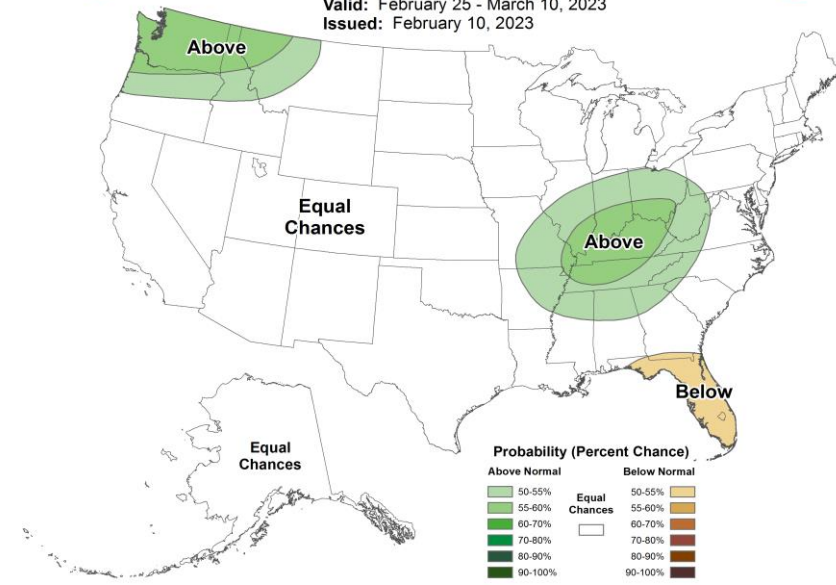
## 8-14 Day Precipitation Outlook

Valid: February 21 - 27, 2023  
Issued: February 13, 2023



## Weeks 3-4 Precipitation Outlook

Valid: February 25 - March 10, 2023  
Issued: February 10, 2023



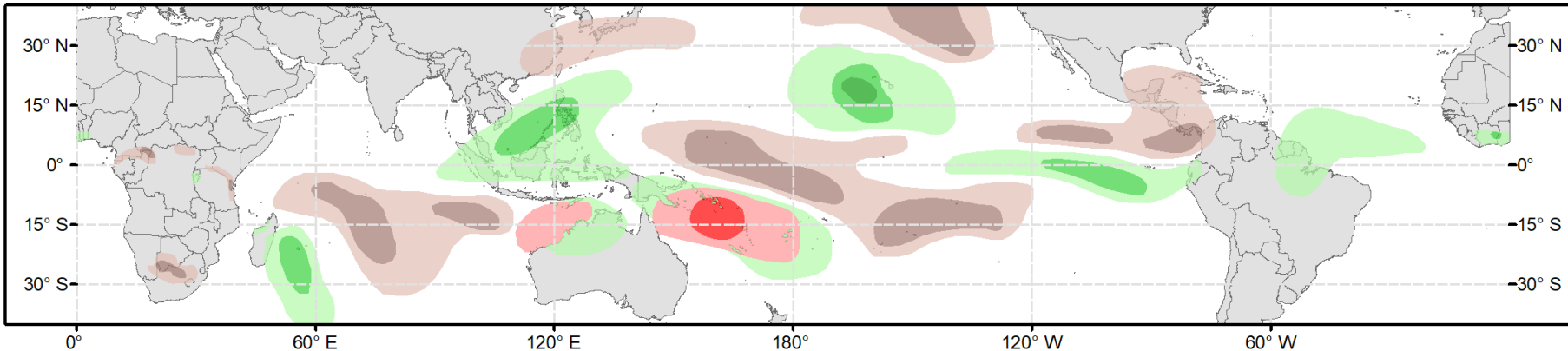


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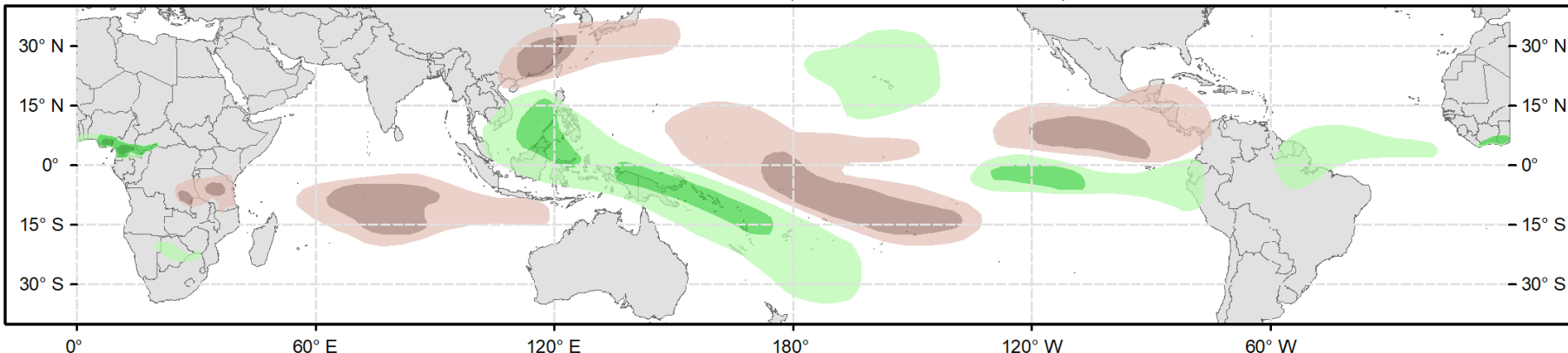
Climate Prediction Center



## Week 2 - Valid: Feb 22, 2023 - Feb 28, 2023



## Week 3 - Valid: Mar 01, 2023 - Mar 07, 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: 02/14/2023**  
**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.**