



# Weeks 2-3 Global Tropics Hazards Outlook

10/1/2024

Thomas Collow

NWS / NCEP / Climate Prediction Center

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

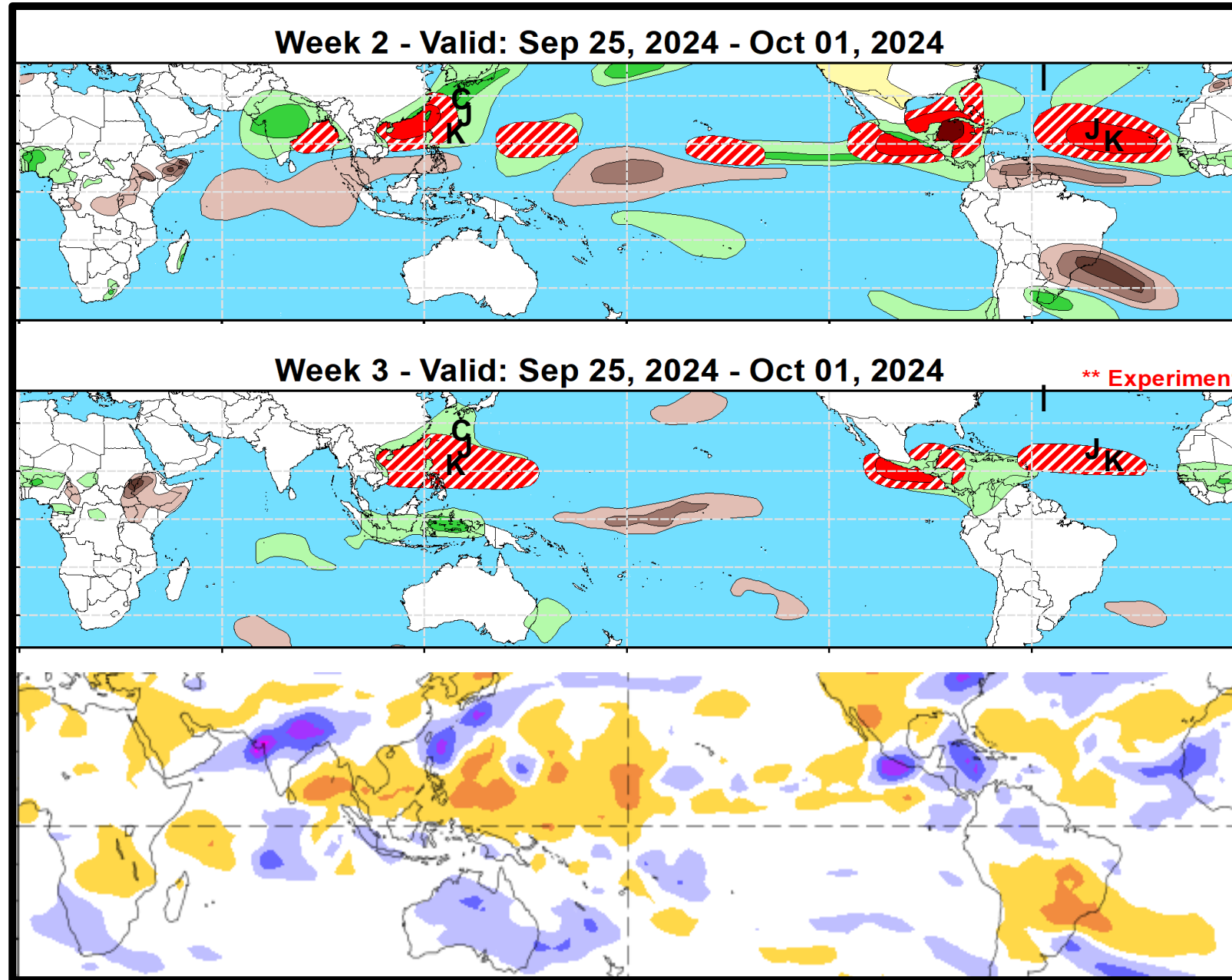
## Atlantic

- Issac (9/26)
- Joyce (9/27)
- Kirk (9/29)

\*Helene formed on 9/24 over the Northwest Caribbean.

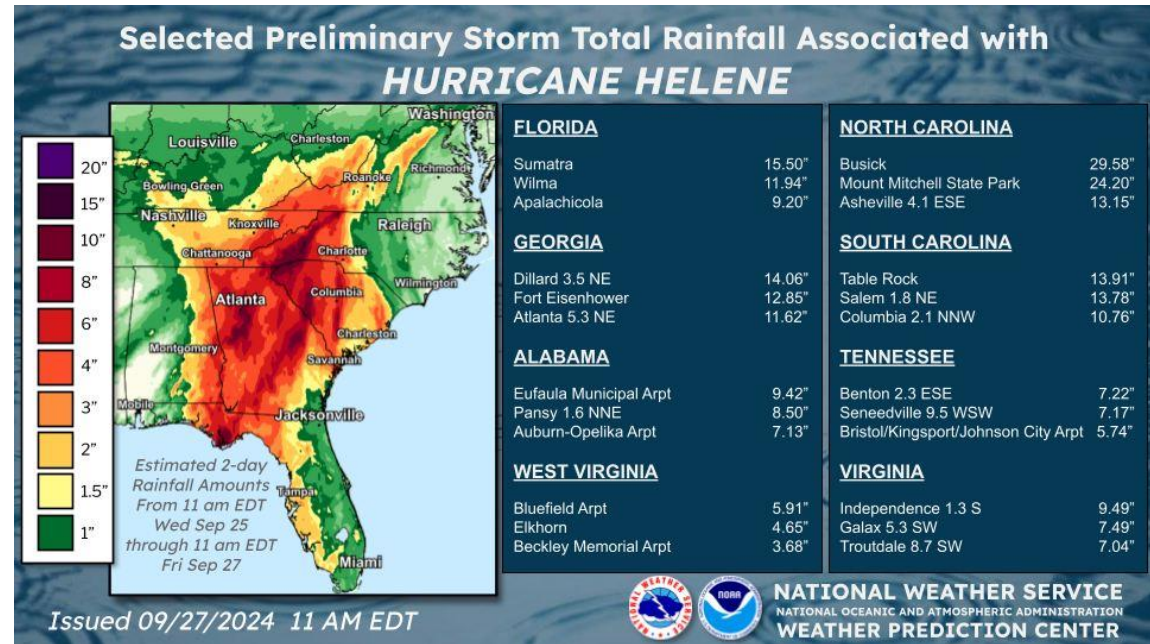
## West Pacific

- Cimaron (9/25)
- Jebi (9/27)
- Krathon (9/28)



# Hurricane Helene

- Rapidly intensified into a category-4 hurricane (140-mph sustained winds), with landfall at that intensity along the Florida Big Bend on 9/27.



Interaction with a frontal system over the east-central U.S. resulted in catastrophic flooding across portions of the Southeast and Carolinas.

# Synopsis of Climate Modes:

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**ENSO:** (Sep 12, 2024 Update)     *next update on Thursday, Oct 10<sup>th</sup>*

- ENSO Alert System Status: [La Niña Watch](#)
- La Niña is favored to emerge in September-November (71% chance) and is expected to persist through January-March 2025.

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

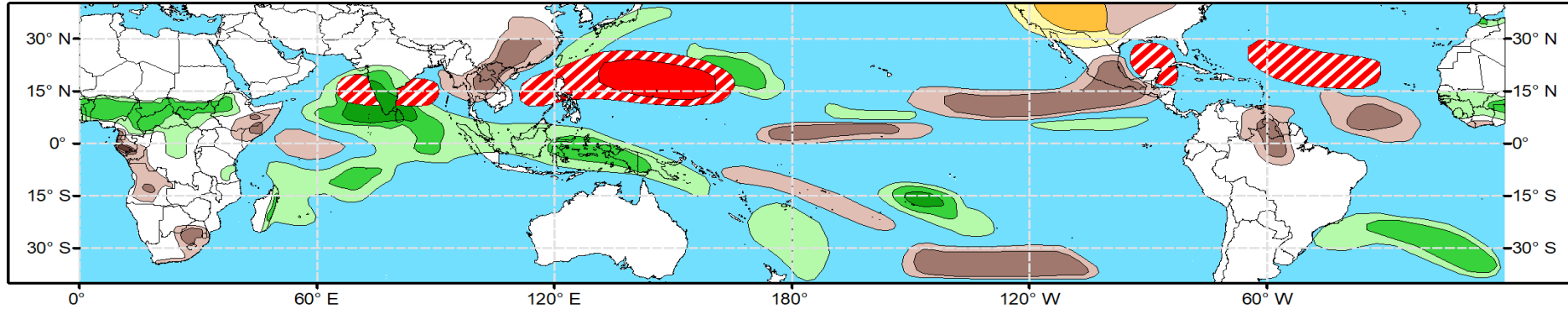
- The MJO is currently active across the Western Hemisphere leading to a pronounced uptick in tropical cyclone (TC) activity across the Atlantic.
- There is a low frequency area of enhanced convection across the Maritime Continent, possibly related to the transitioning ENSO state.
- Dynamical models forecast the MJO to propagate eastward into the Indian Ocean and Maritime Continent, constructively interfering with this low frequency convective footprint.



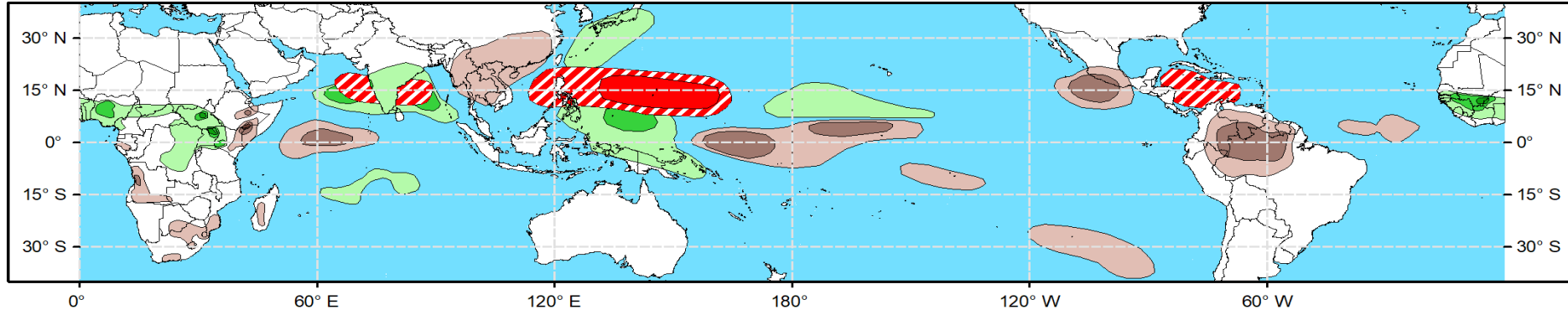
## Global Tropics Hazards Outlook Climate Prediction Center



**Week 2 - Valid: Oct 09, 2024 - Oct 15, 2024**



**Week 3 - Valid: Oct 16, 2024 - Oct 22, 2024**



**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*

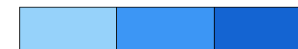
**Above-Average  
Temperatures Probability**



>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*

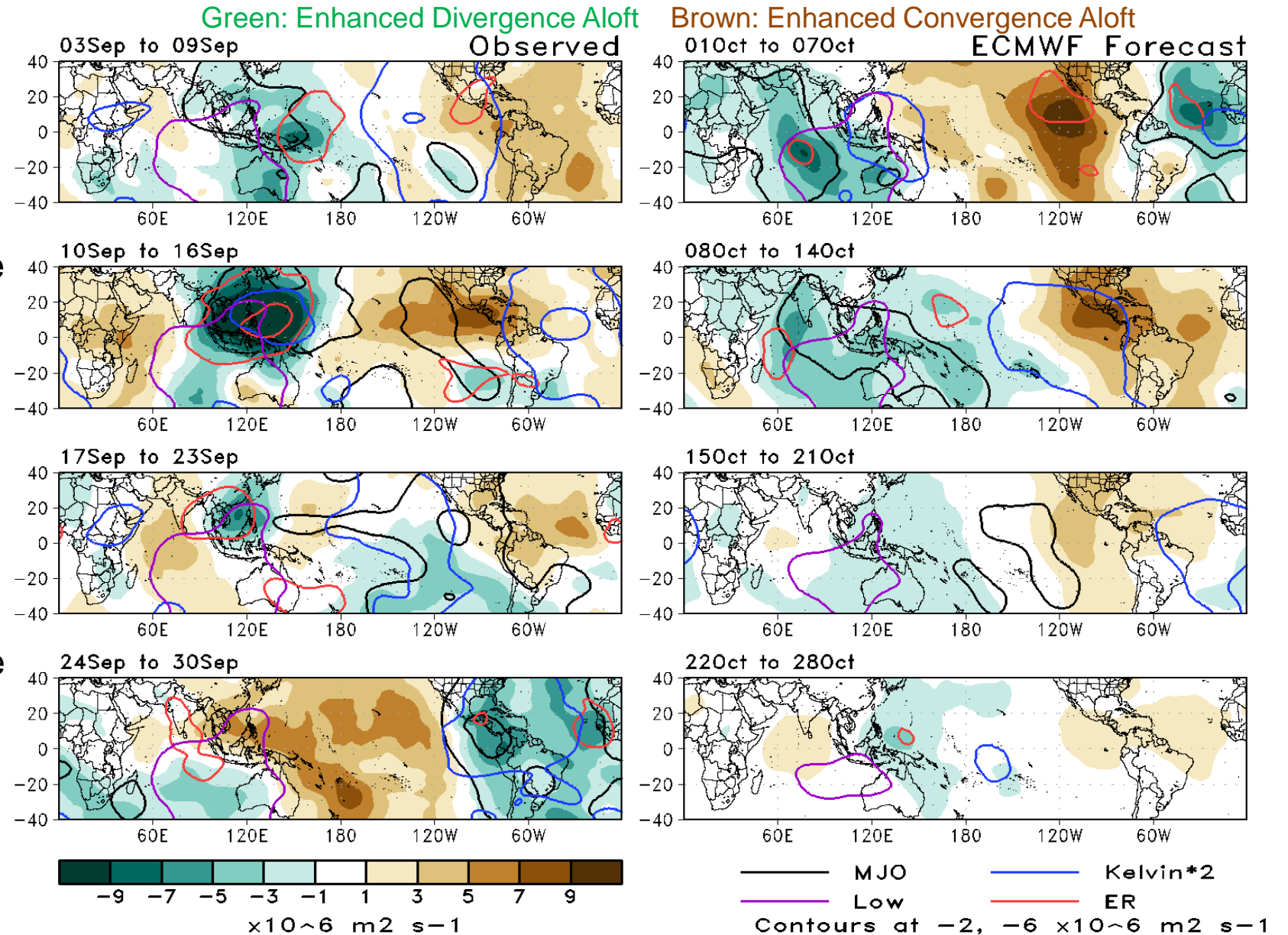
**Issued: 10/01/2024  
Forecaster: Collow**

**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.**

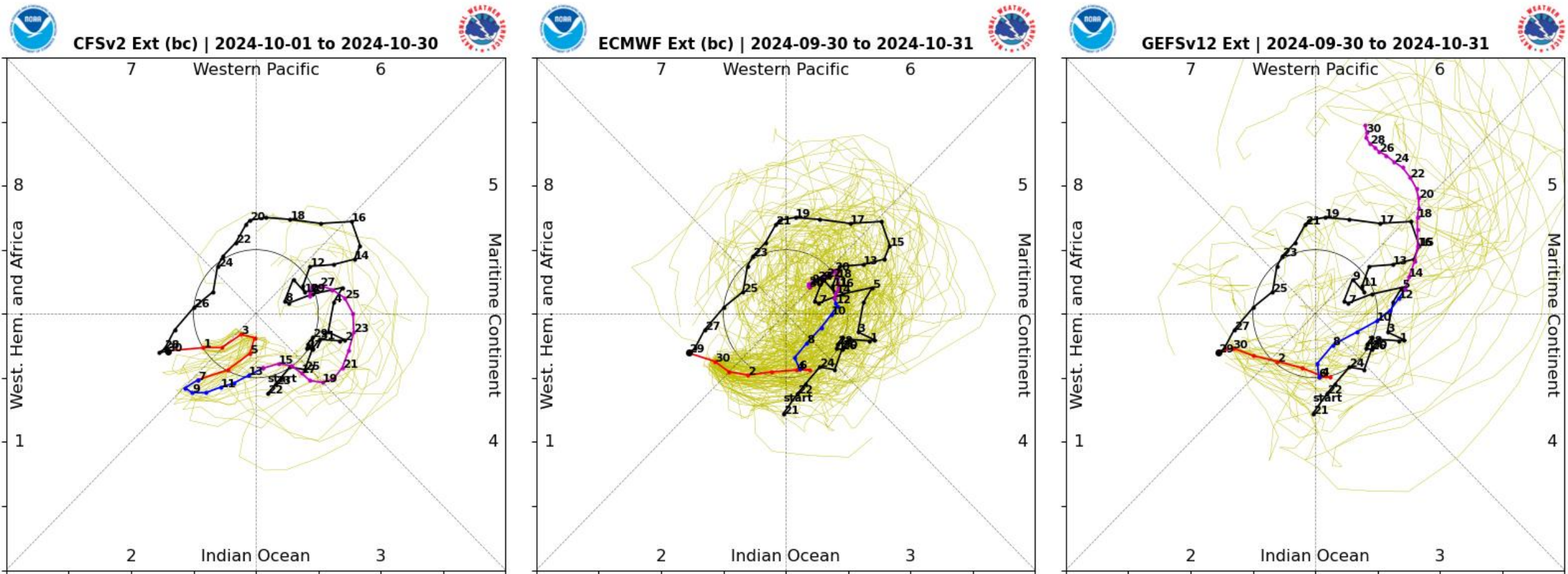


# 200-hPa Velocity Potential Anomaly Maps:

- The **MJO** is forecast to move into the Indian Ocean and Maritime Continent, constructively interfering with the **low frequency** convective signal.
- The suppressed phase of the **MJO** is predicted to move over the Americas by week-2.
- A Convectively Coupled **Kelvin Wave** may destructively interfere with the suppressed MJO phase around mid-October.

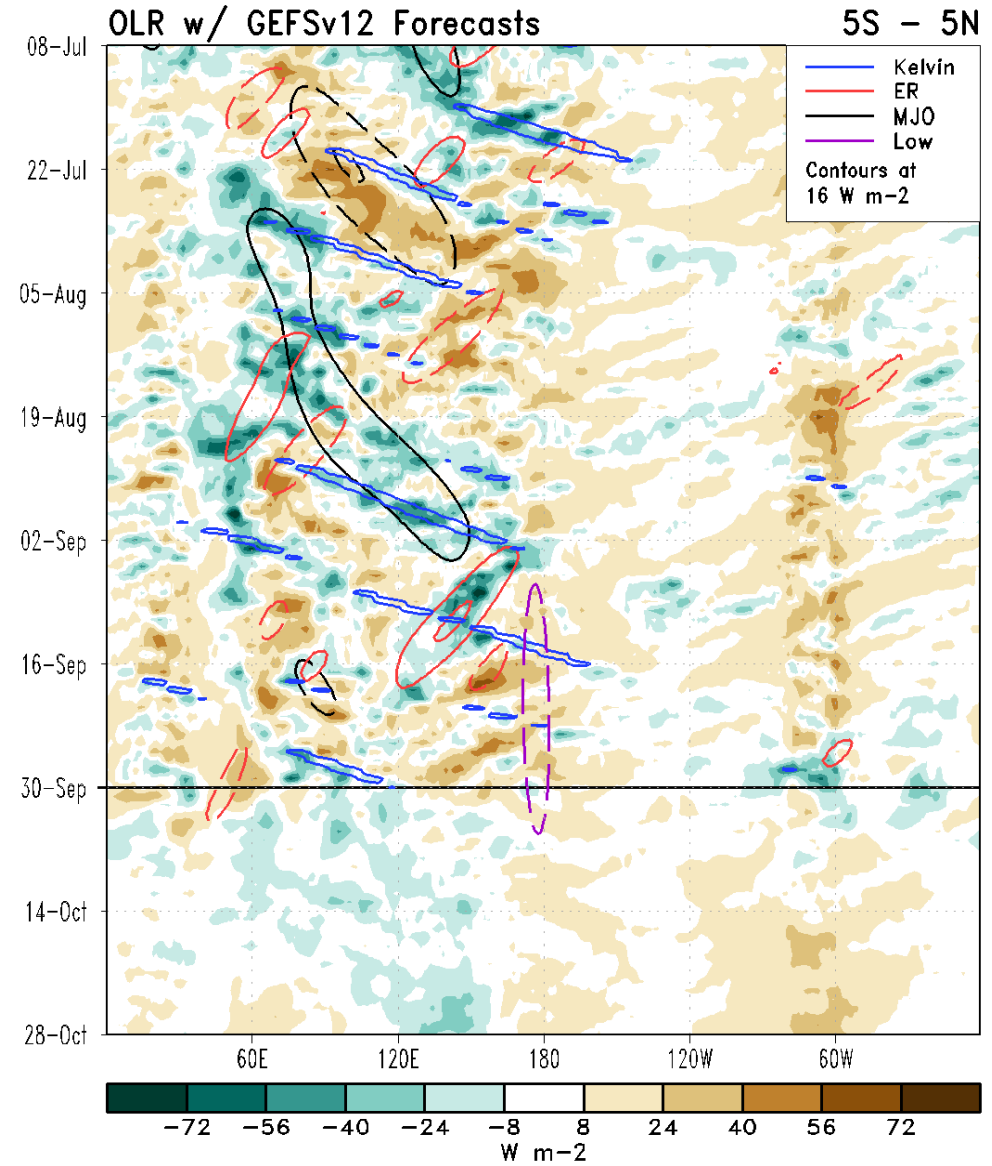
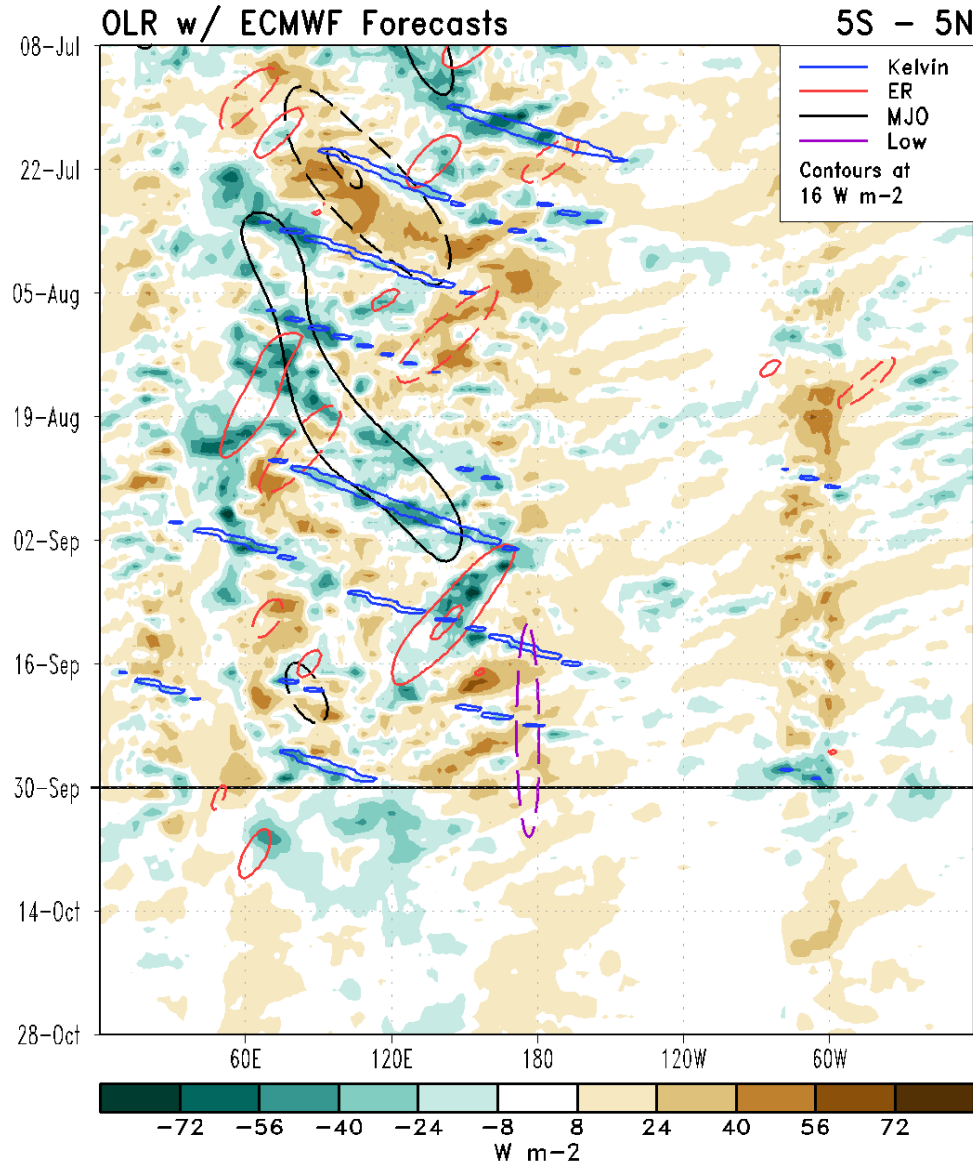


# RMM Index Observations & Forecasts:



- The CFS, ECMWF, and GEFS ensembles depict the RMM-based MJO index continuing an eastward propagation into the Eastern Hemisphere throughout October.

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

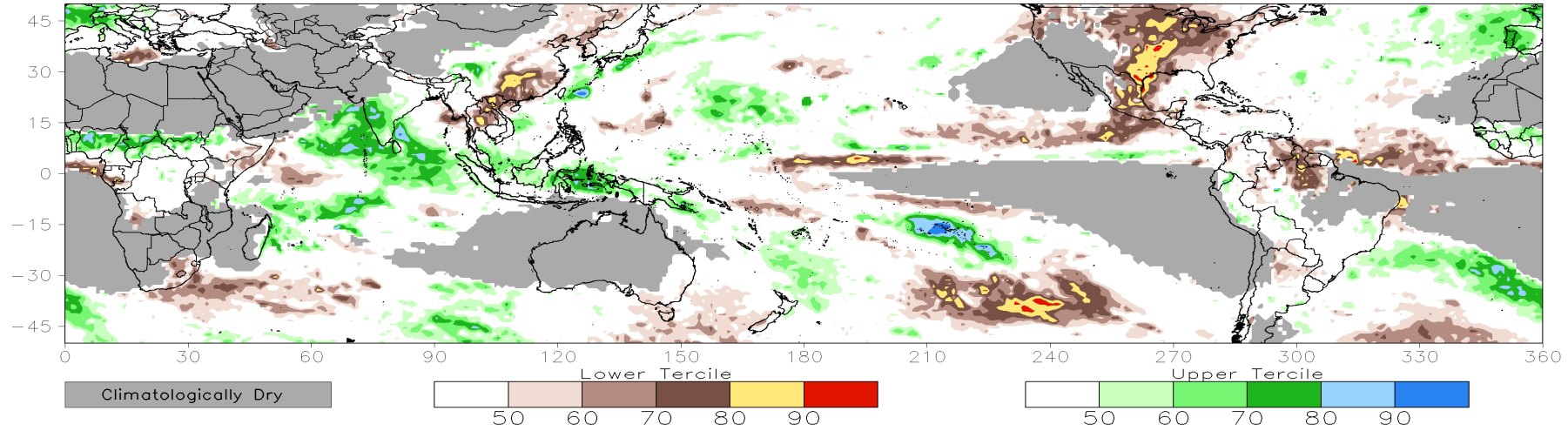




# Consolidated Probabilistic Precipitation: Weeks 2 & 3

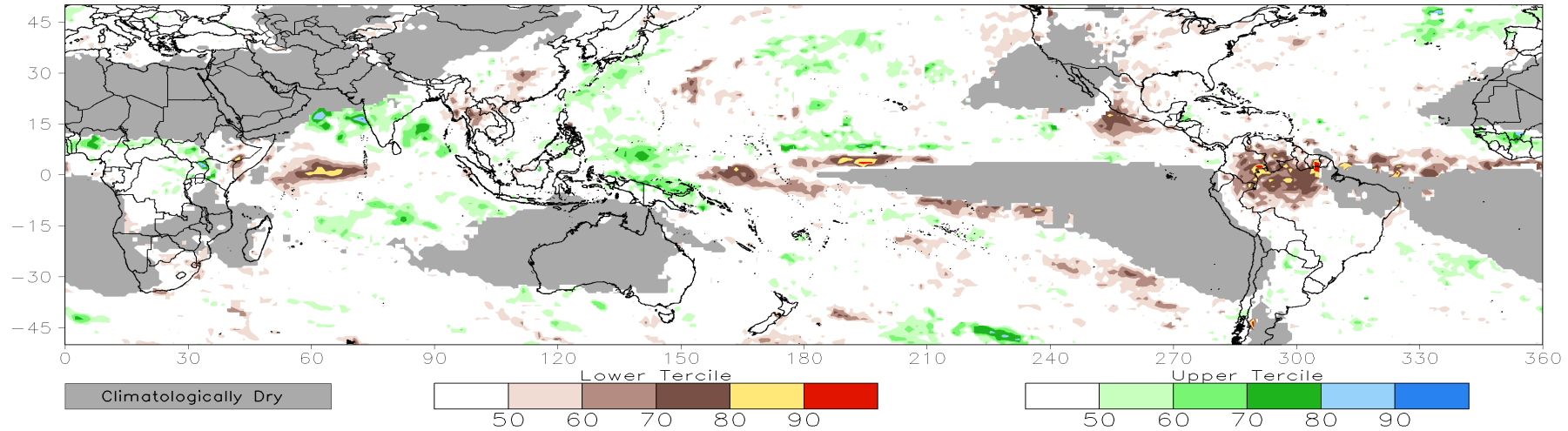
CONS 00z: Week2 Probability for Total Rainfall Below(Above) Lower(Upper) Tercile (%)

Valid: 09Oct2024–15Oct2024



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

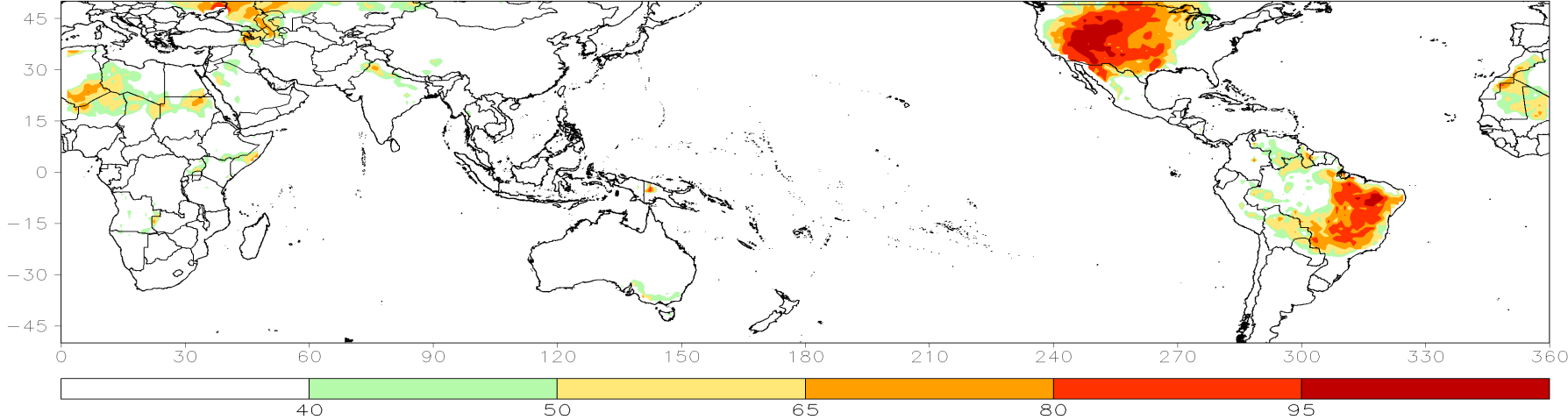
Valid: 16Oct2024–22Oct2024



# Consolidated Probabilistic Temperatures: Week-2

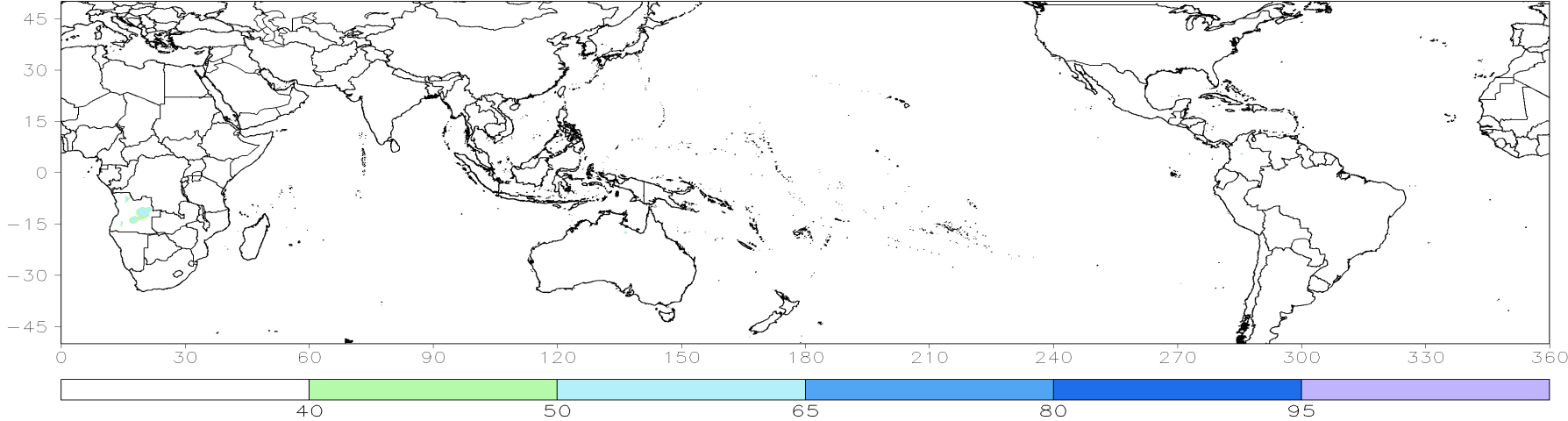
CFS/ECMWF/GEFS Correlation Weighted: Week2 Probability for Tmax Above Upper Tercile (%)

Valid: 09Oct2024-15Oct2024



CFS/ECMWF/GEFS Correlation Weighted: Week2 Probability for Tmin Below Lower Tercile (%)

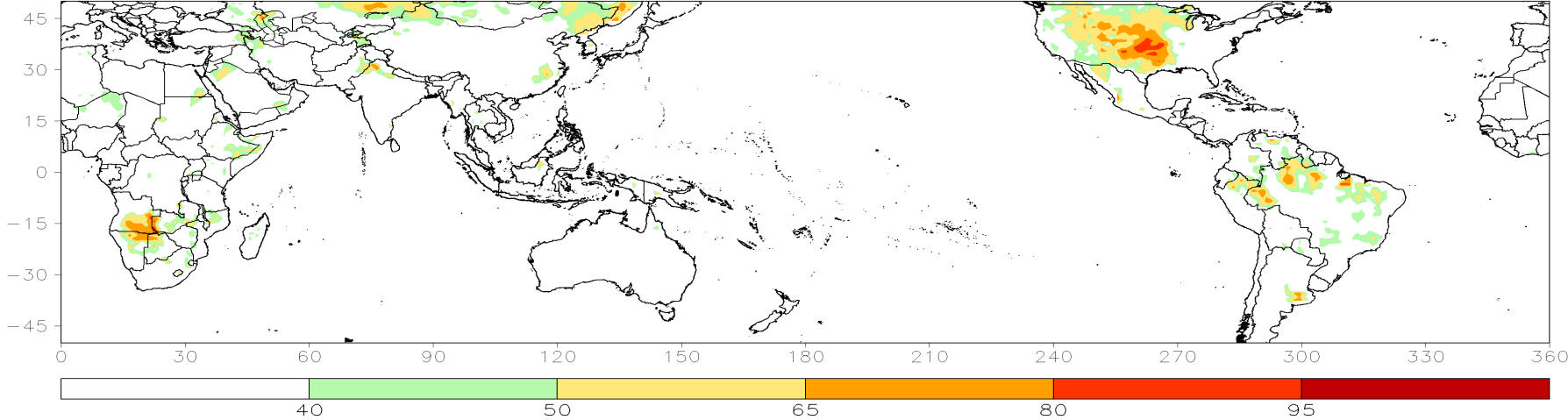
Valid: 09Oct2024-15Oct2024



# Consolidated Probabilistic Temperatures: Week-3

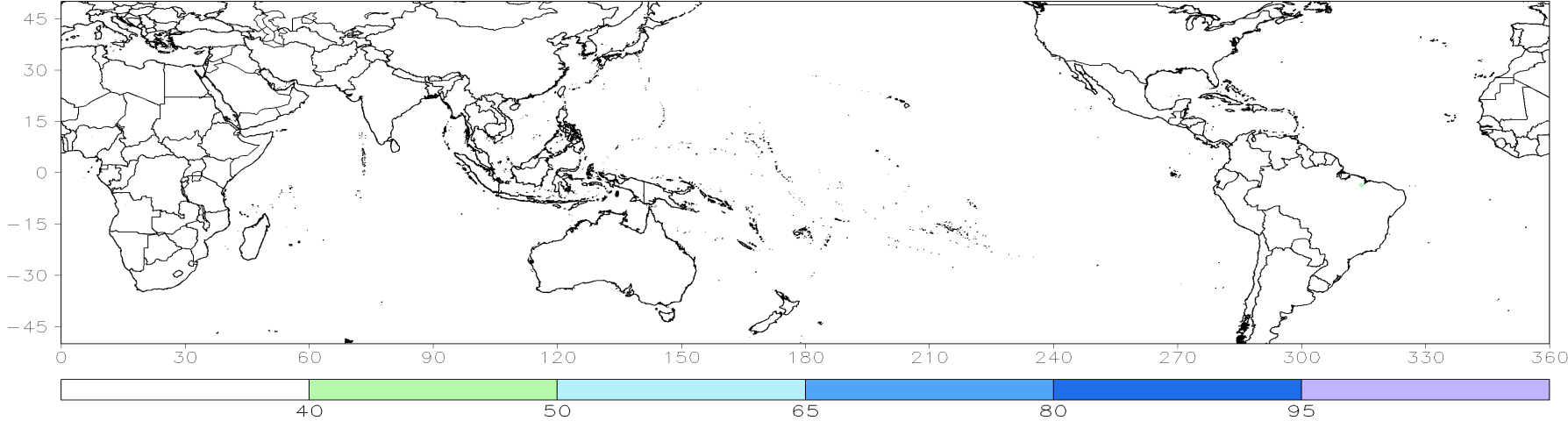
CFS/ECMWF/GEFS Correlation Weighted: Week3 Probability for Tmax Above Upper Tercile (%)

Valid: 16Oct2024-22Oct2024



CFS/ECMWF/GEFS Correlation Weighted: Week3 Probability for Tmin Below Lower Tercile (%)

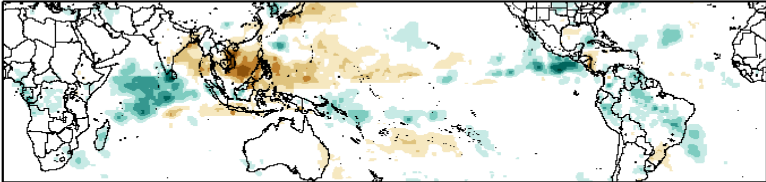
Valid: 16Oct2024-22Oct2024



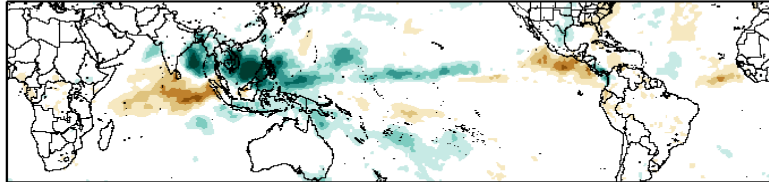
# Historical Precipitation Anomalies By MJO Phase:

SON MJO Composite: GPCP1DD (mm/day)

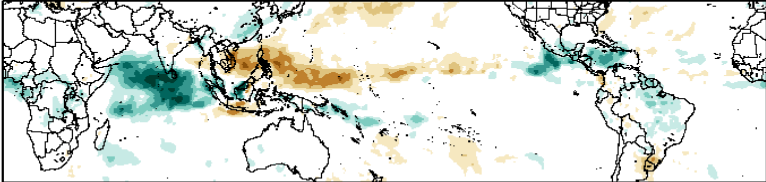
Phase 1



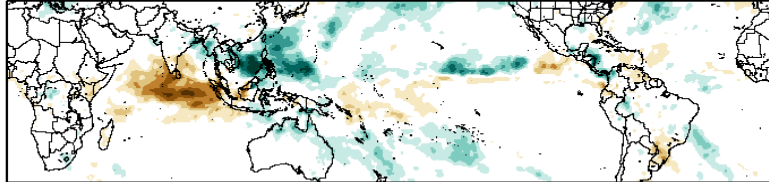
Phase 5



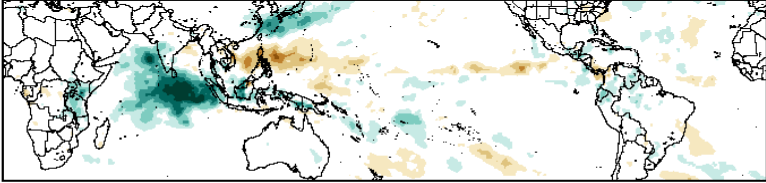
Phase 2



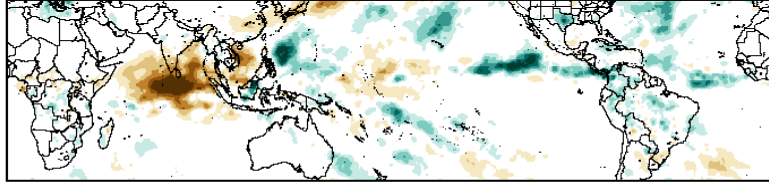
Phase 6



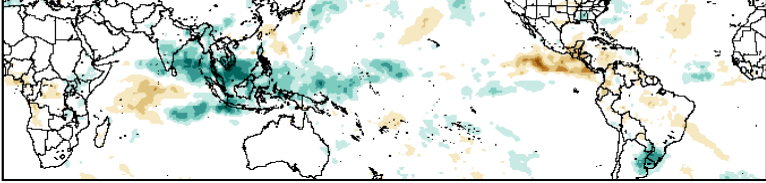
Phase 3



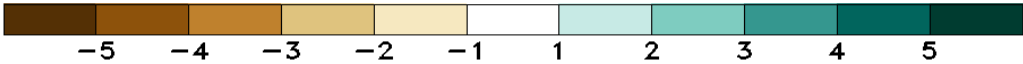
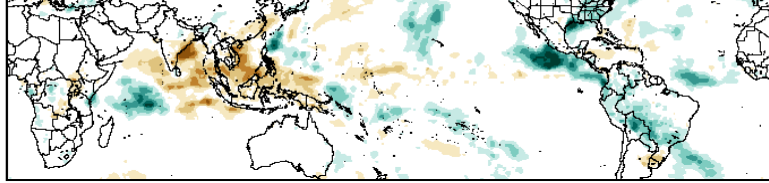
Phase 7



Phase 4



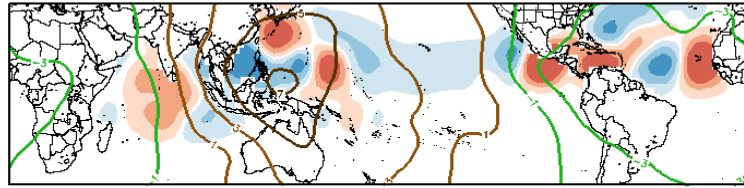
Phase 8



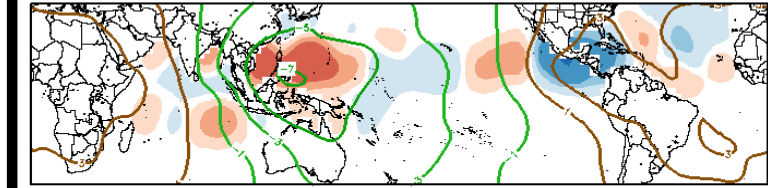


# Historical TC Origin Anomalies By MJO Phase & Weeks 2+3 Genesis Climo:

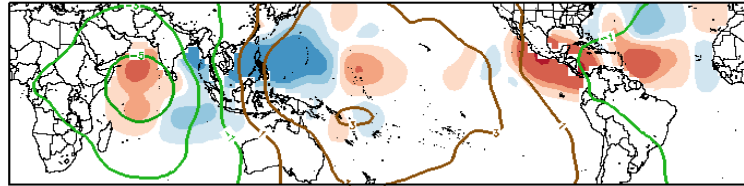
SON MJO Composite: Mean TC Origin Density Anomaly ( $\#TCs/277km^2*100$ )  
 w/ SON CHI200 ( $\times 10^6 m^2 s^{-1}$ ) / Contours every  $2 \times 10^6 m^2 s^{-1}$



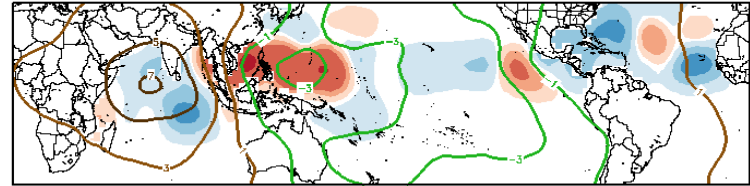
Phase 1



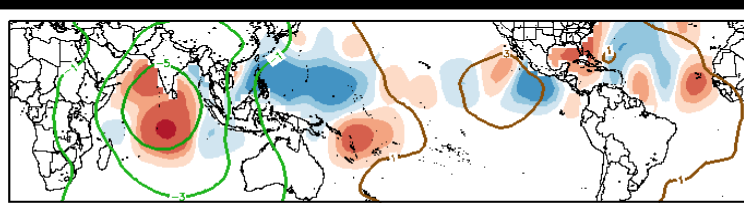
Phase 5



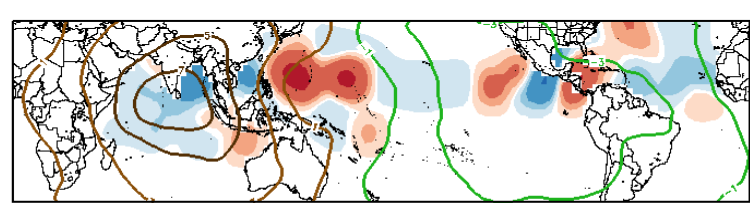
Phase 2



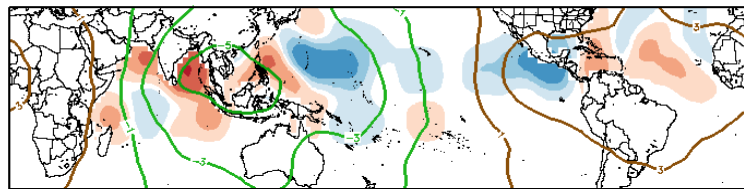
Phase 6



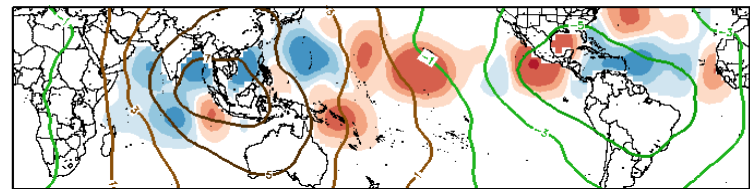
Phase 3



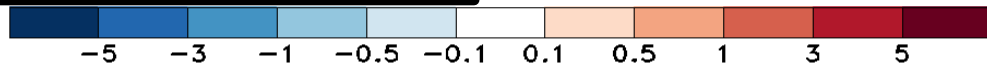
Phase 7



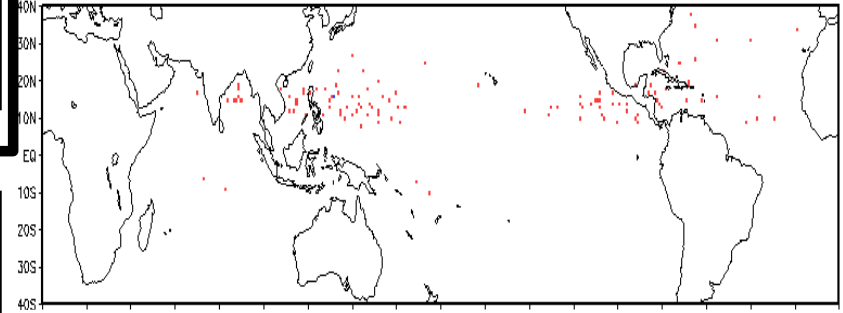
Phase 4



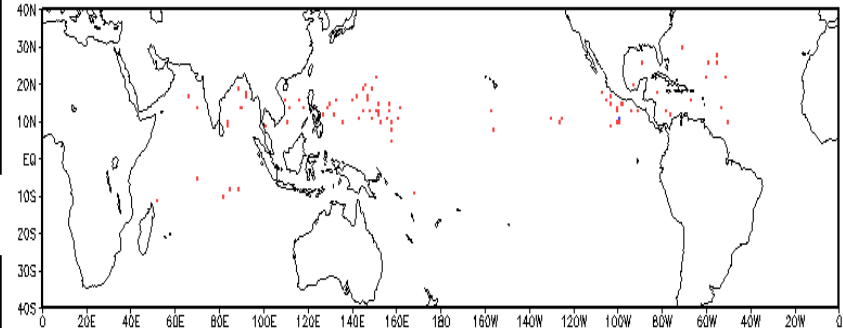
Phase 8



Observed TC Genesis, 1979-2021  
 7-day Period 1009 to 1015

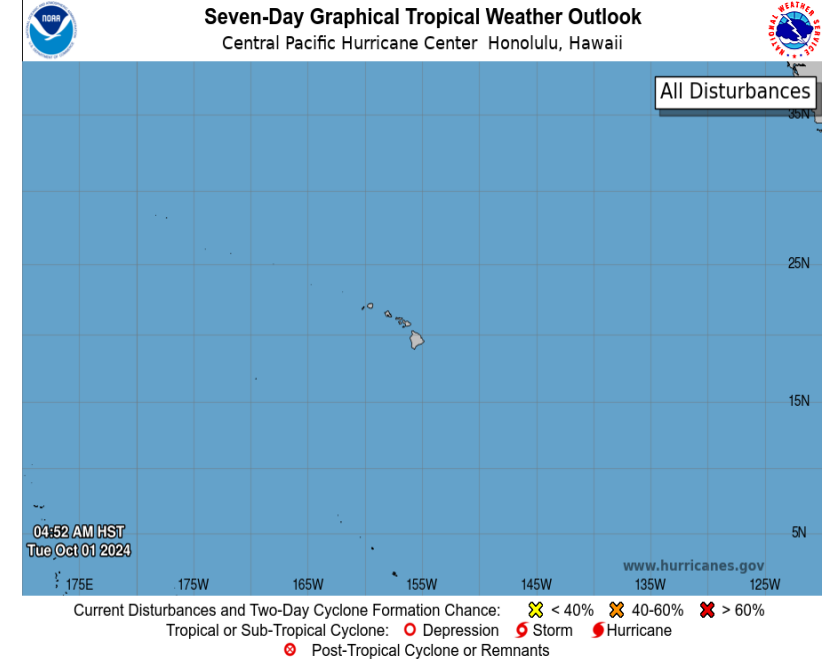
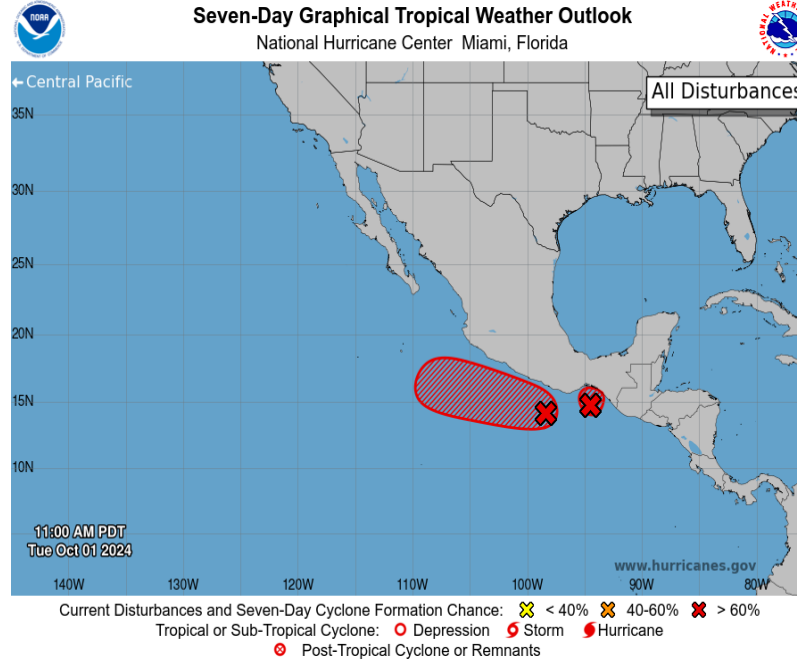
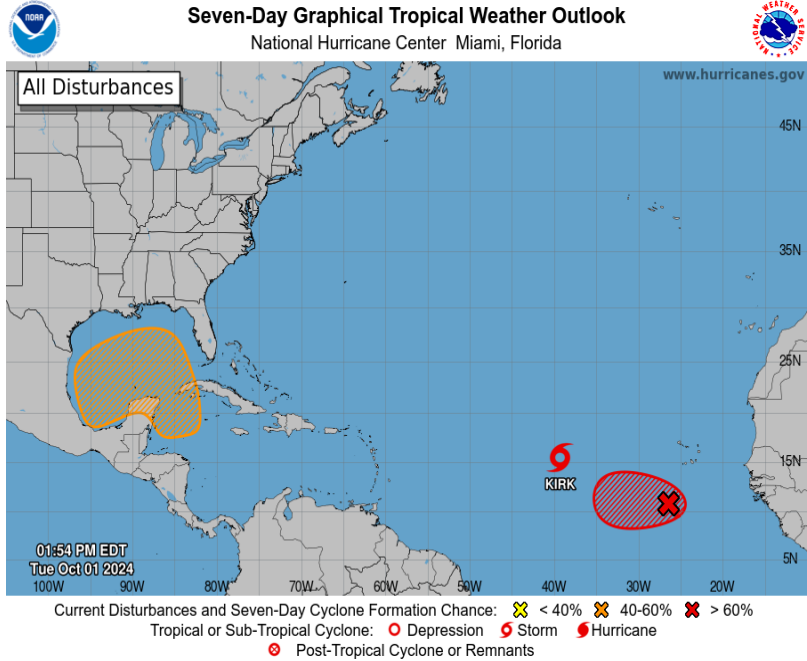


Observed TC Genesis, 1979-2021  
 7-day Period 1016 to 1022



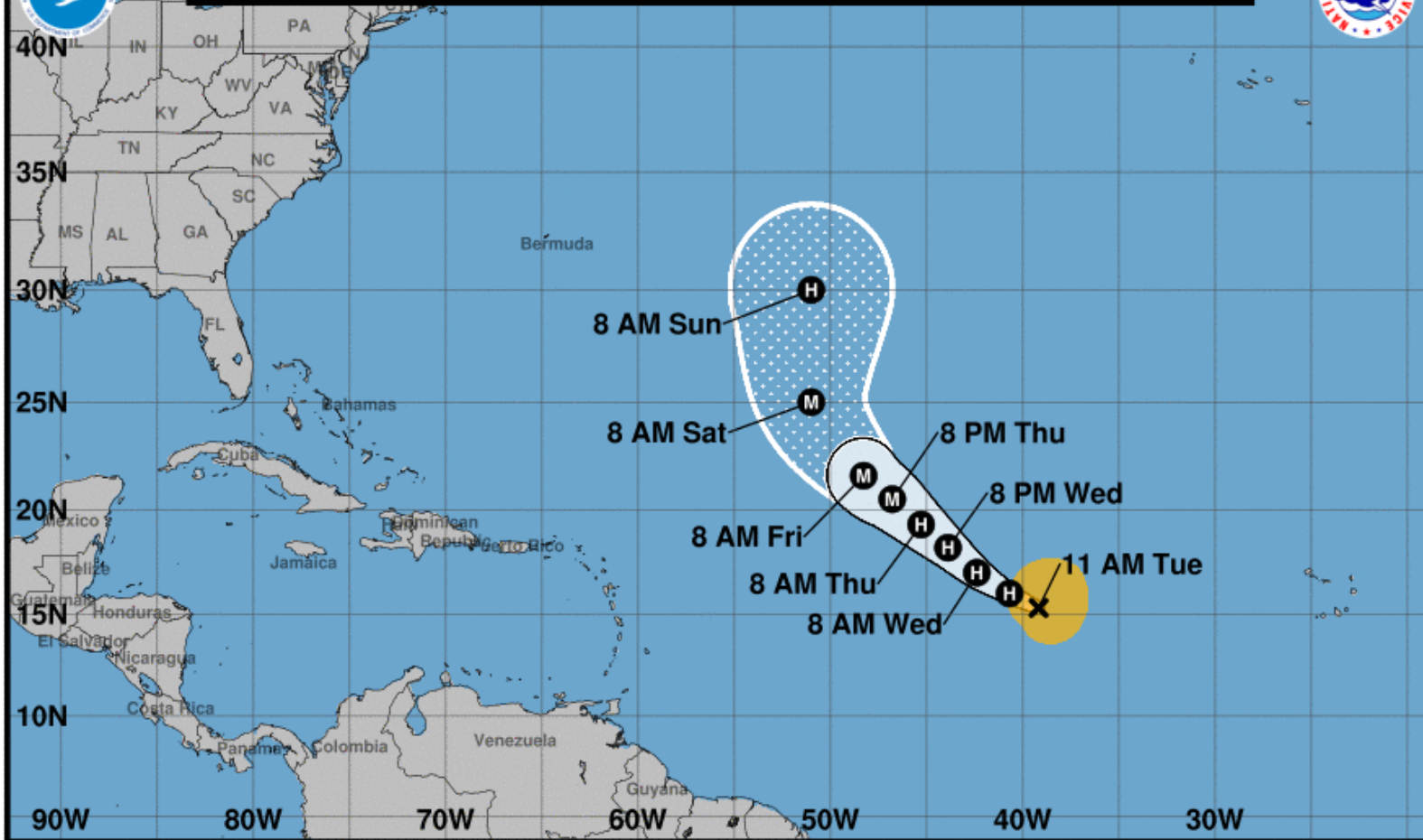
\*Experimental\*

# Tropical Cyclone Monitoring/Forecast: NHC / CPHC





**Note: The cone contains the probable path of the storm center but does not show the size of the storm. Hazardous conditions can occur outside of the cone.**



**Tropical Storm Kirk**  
 Tuesday October 01, 2024  
 11 AM AST Advisory 8  
 NWS National Hurricane Center

**Current information: x**  
 Center location 15.3 N 39.2 W  
 Maximum sustained wind 70 mph  
 Movement WNW at 13 mph

**Forecast positions:**  
 ● Tropical Cyclone ○ Post/Potential TC  
 Sustained winds: D < 39 mph  
 S 39-73 mph H 74-110 mph M > 110 mph

**Potential track area:** Day 1-3 (solid white) Day 4-5 (dotted)

**Watches:** Hurricane (pink) Trop Stm (yellow)

**Warnings:** Hurricane (red) Trop Stm (blue)

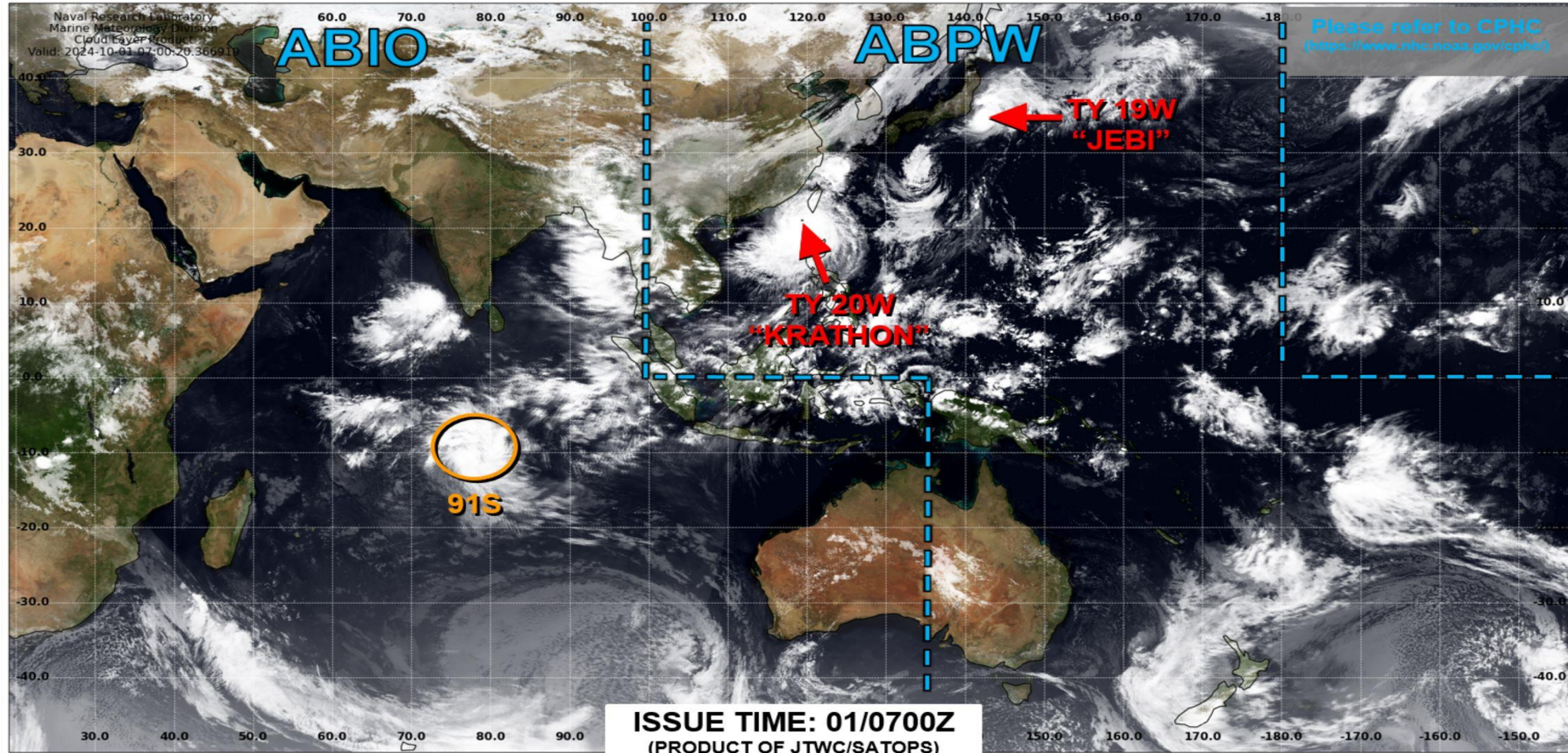
**Current wind field estimate:** Hurricane (brown) Trop Stm (orange)



# 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)

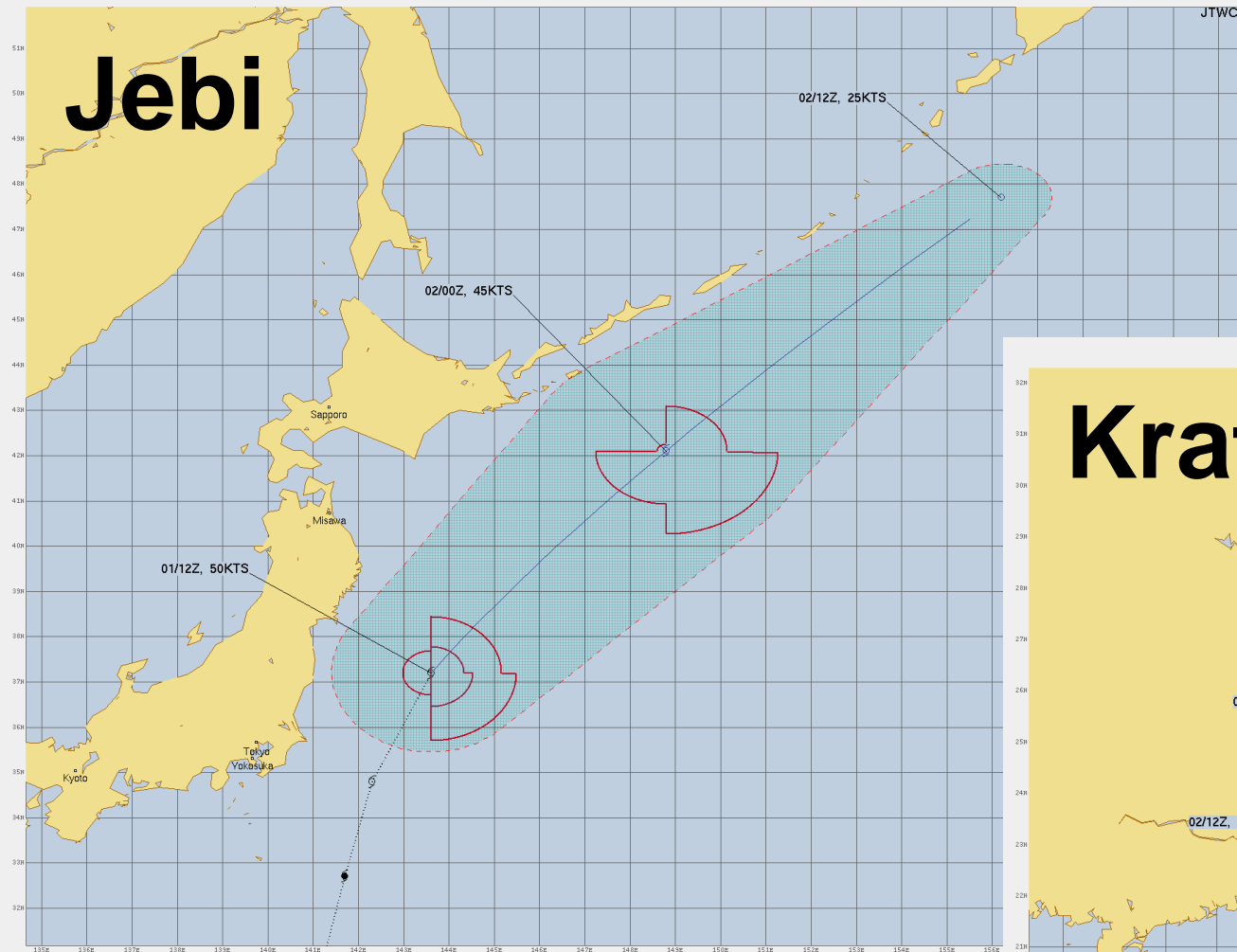


Monitoring for potential transition to TC. Invest label color denotes tropical transition probability





# Jebi



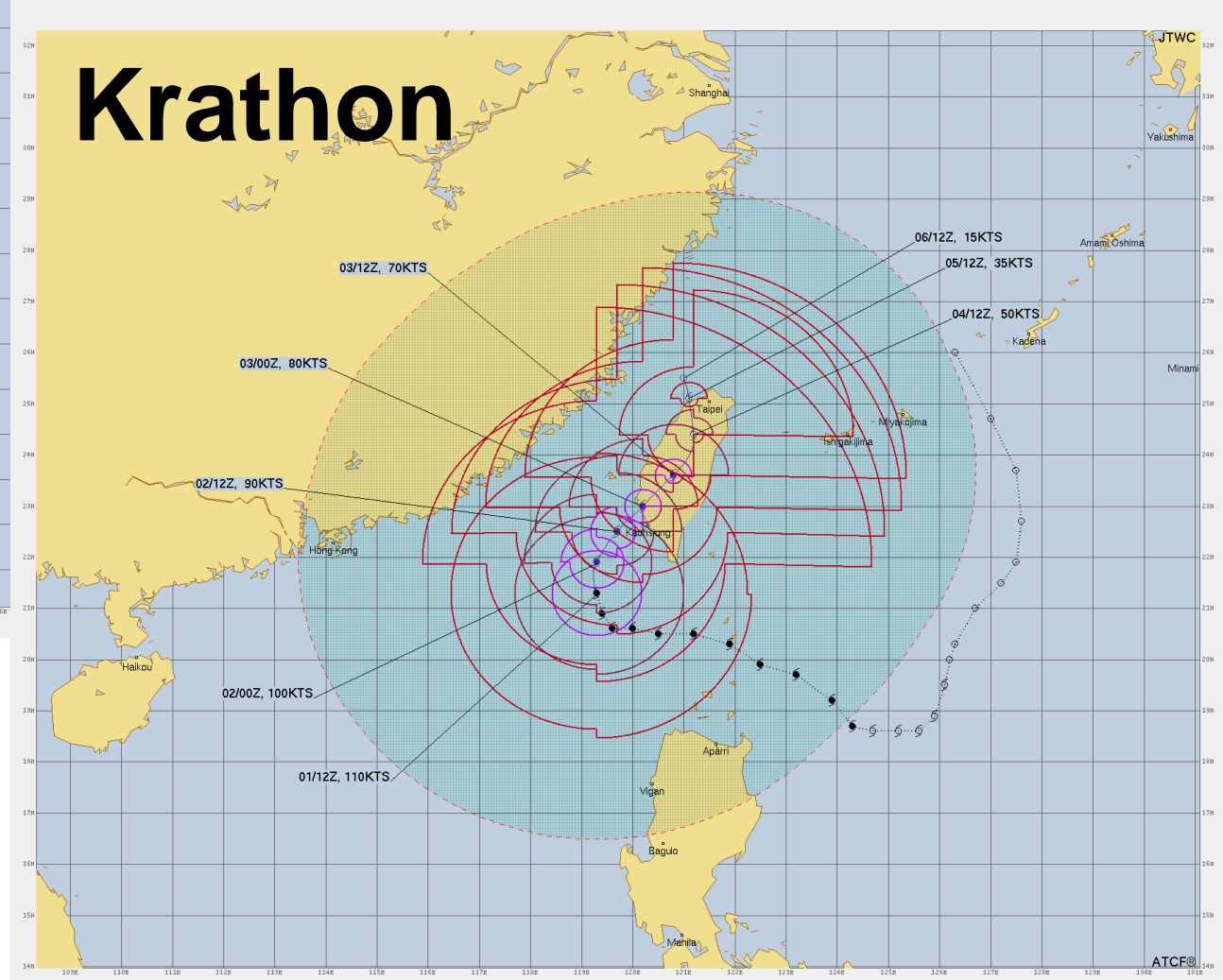
TYPHOON STORM 19W (JEBI) WARNING #21  
 011200Z 19W 011200  
 011200Z POSIT READ 37 24 343 NE  
 HURICAN 025 OBSERVED TIME AT 30 HOURS  
 MAXIMUM 33AREPSCANT WAVE HEIGHT 27 FEET  
 01/12Z WINDS 050 KTS, GUSTS TO 805 KTS  
 02/00Z WINDS 045 KTS, GUSTS TO 805 KTS  
 02/12Z WINDS 025 KTS, GUSTS TO 405 KTS

| DATA     | NO  | DTG       |
|----------|-----|-----------|
| CLASR_AD | 213 | 10/01/15Z |
| DRGFLG   | 283 | 10/01/15Z |

| BEREAMN AND DISTANCE | DIR   | DECR  | TAVL  |
|----------------------|-------|-------|-------|
|                      | (DEG) | (MPS) | (MPS) |
| MIKAWA               | 062   | 273   | 0     |
| OHKIYAMA             | 062   | 264   | 0     |
| YAMAGUCHI            | 062   | 237   | 0     |
| MIYAKOJIMA           | 153   | 236   | 0     |
| YAMAGUCHI            | 060   | 176   | 0     |
| YAMAGUCHI            | 058   | 220   | 0     |
| YAMAGUCHI            | 065   | 222   | 0     |
| YAMAGUCHI            | 145   | 275   | 0     |

○ LESS THAN 34 KNOTS  
 ○ 34-43 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)

# Krathon



TYPHOON STORM 19W (KRATHON) WARNING #10  
 011200Z 19W 011200  
 011200Z POSIT READ 23 19 313 NE  
 HURICAN 025 OBSERVED TIME AT 04 HOURS  
 MAXIMUM 33AREPSCANT WAVE HEIGHT 43 FEET  
 01/12Z WINDS 110 KTS, GUSTS TO 185 KTS  
 02/00Z WINDS 100 KTS, GUSTS TO 175 KTS  
 02/12Z WINDS 090 KTS, GUSTS TO 150 KTS  
 03/00Z WINDS 080 KTS, GUSTS TO 140 KTS  
 03/12Z WINDS 070 KTS, GUSTS TO 120 KTS  
 04/12Z WINDS 055 KTS, GUSTS TO 105 KTS  
 05/12Z WINDS 035 KTS, GUSTS TO 85 KTS  
 06/12Z WINDS 015 KTS, GUSTS TO 45 KTS

| DATA      | NO  | DTG       |
|-----------|-----|-----------|
| CLASR_AD  | 204 | 10/01/12Z |
| DRGFLG    | 21  | 10/01/12Z |
| YAMAGUCHI | 11  | 10/01/12Z |
| YAMAGUCHI | 374 | 10/01/12Z |
| YAMAGUCHI | 370 | 10/01/12Z |
| YAMAGUCHI | 343 | 10/01/12Z |

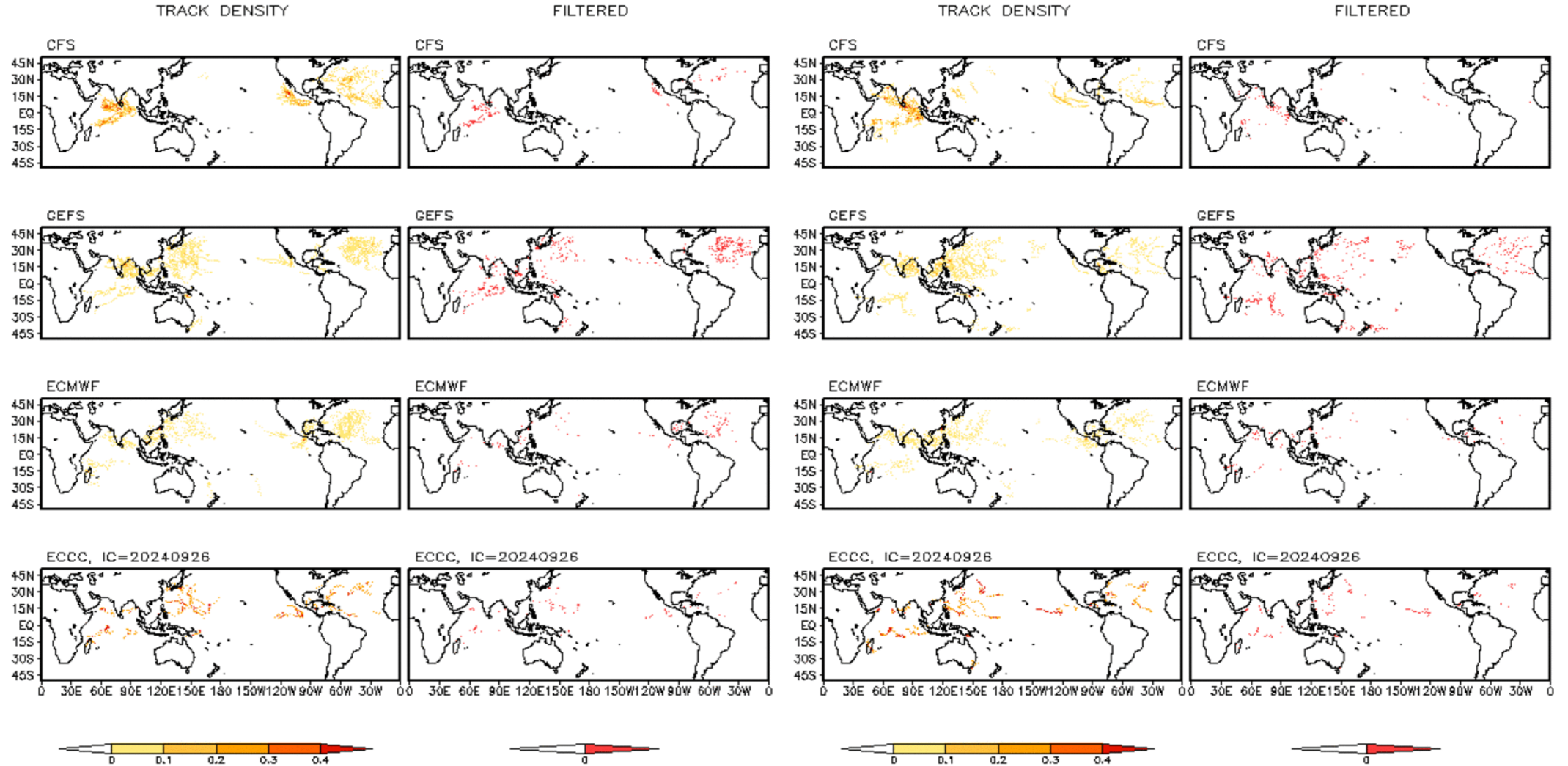
| BEREAMN AND DISTANCE | DIR   | DECR  | TAVL  |
|----------------------|-------|-------|-------|
|                      | (DEG) | (MPS) | (MPS) |
| MIKAWA               | 065   | 273   | 0     |
| OHKIYAMA             | 061   | 230   | 0     |
| YAMAGUCHI            | 058   | 220   | 0     |
| YAMAGUCHI            | 153   | 230   | 0     |
| YAMAGUCHI            | 065   | 222   | 0     |

○ LESS THAN 34 KNOTS  
 ○ 34-43 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 Densities: Weeks 2+3

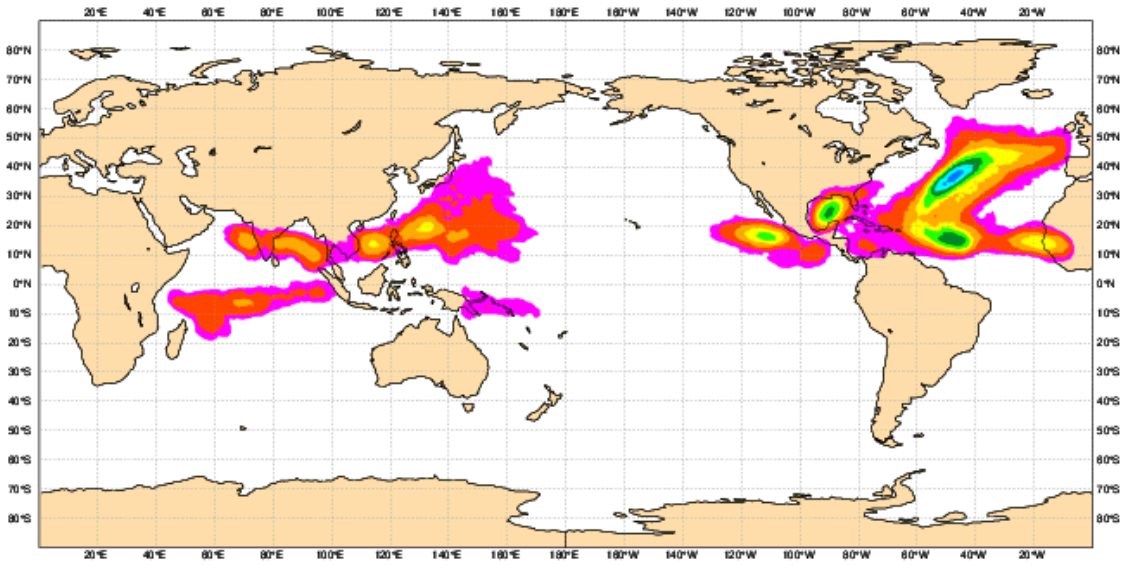
Storm Track Density Distribution, IC=20240930  
Week 2 Forecast: 1009–1015

Storm Track Density Distribution, IC=20240930  
Week 3 Forecast: 1016–1022



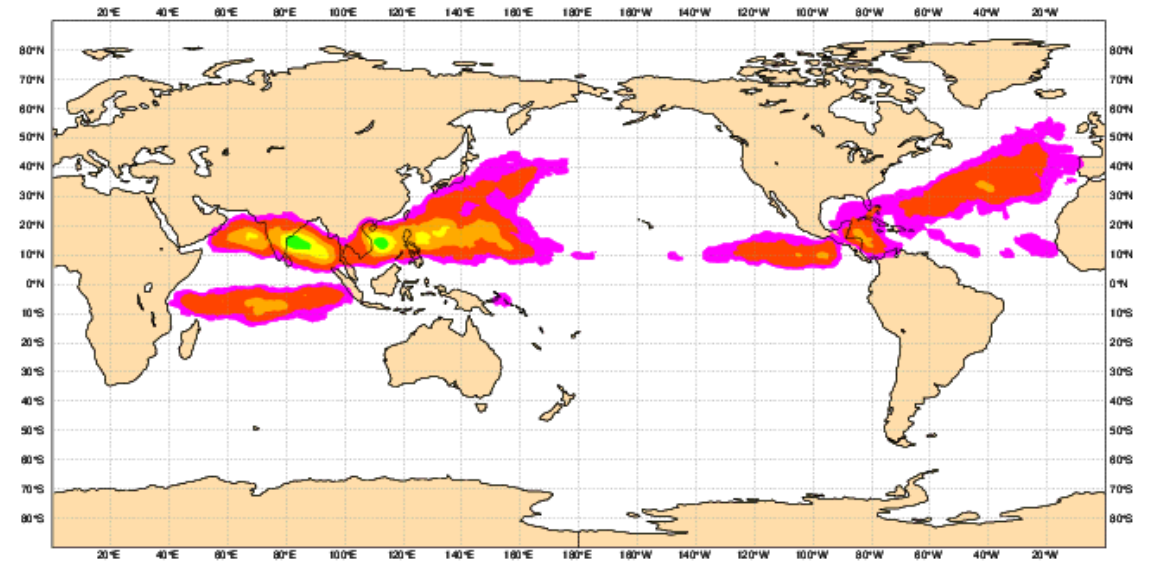
Weekly Mean Tropical Cyclone Strike Probability. Date: 20240930 0 UTC t+(168-336)  
Probability of a TC passing within 300km radius

5-10 10-20 20-30 30-40 40-50 50-60 60-70 70-80 80-90 90-110



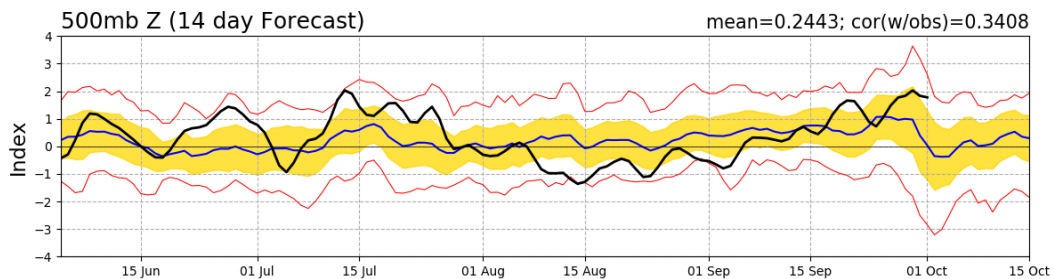
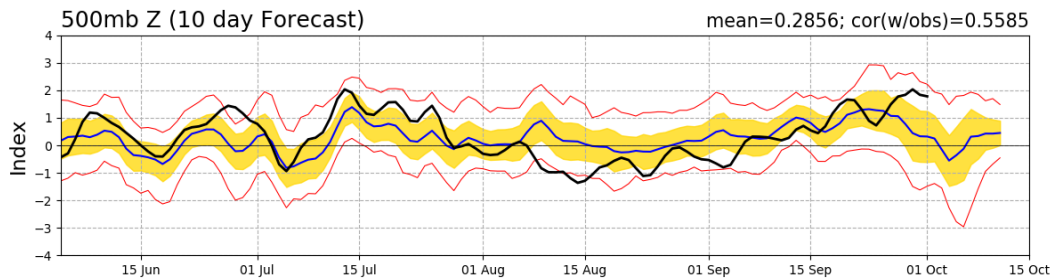
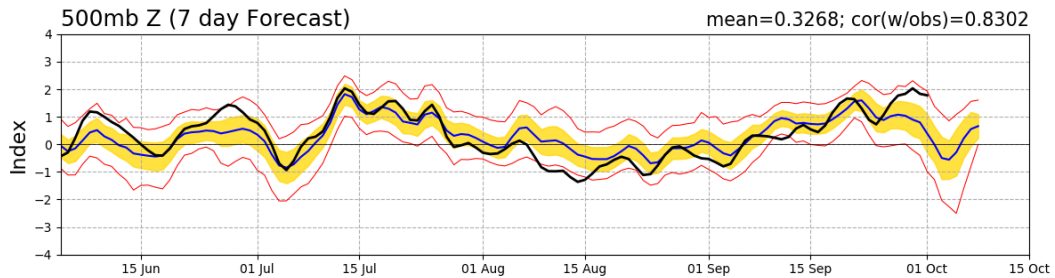
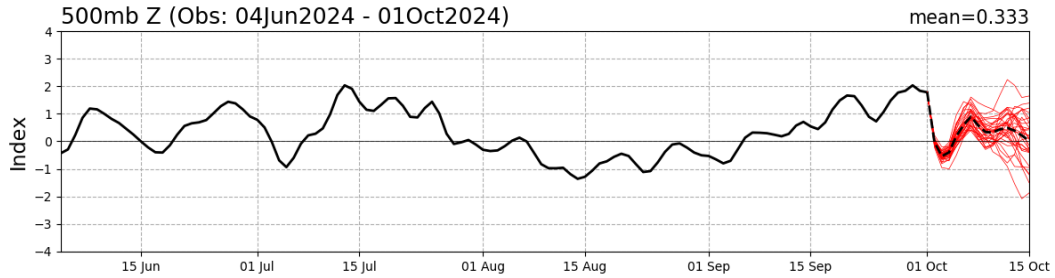
Weekly Mean Tropical Cyclone Strike Probability. Date: 20240930 0 UTC t+(336-504)  
Probability of a TC passing within 300km radius

5-10 10-20 20-30 30-40 40-50 50-60 60-70 70-80 80-90 90-110

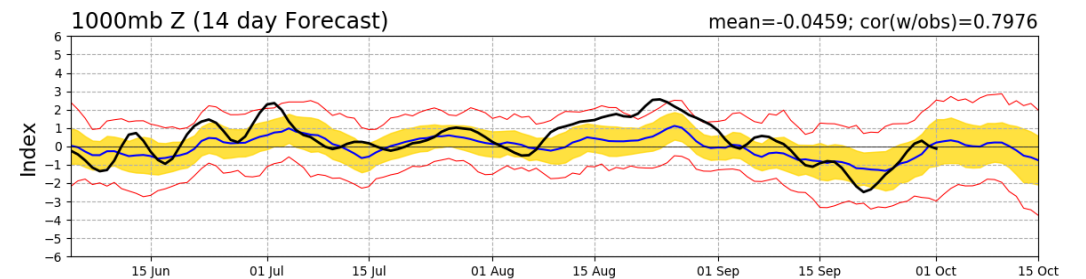
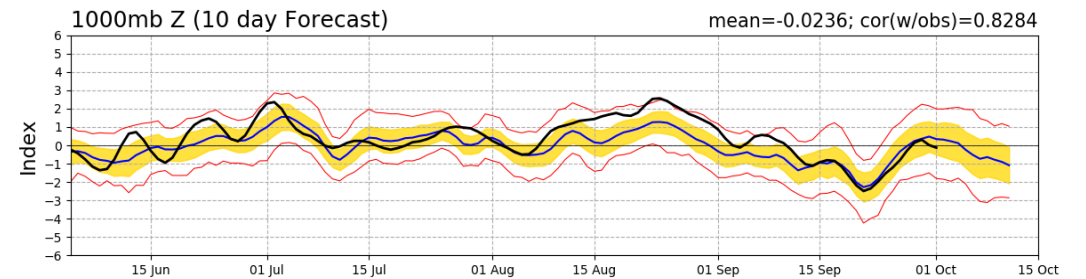
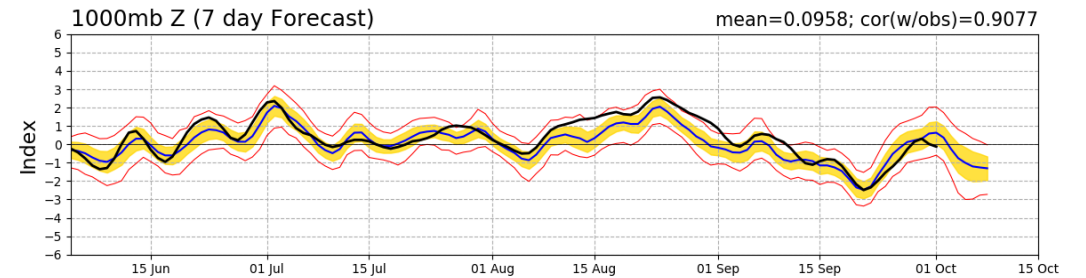
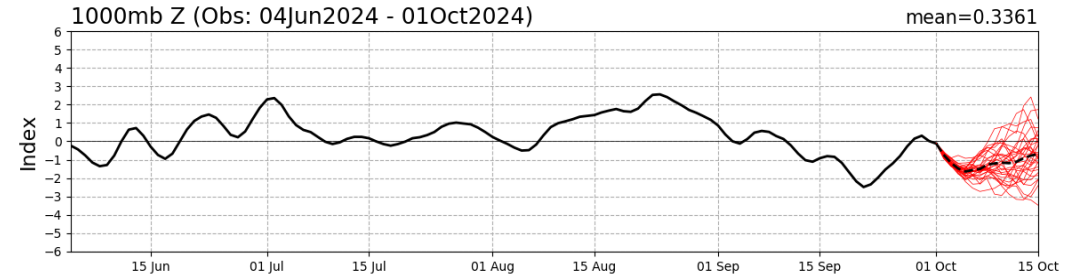


# Teleconnection Indices: PNA / AO:

## PNA Index: Observed & GEFS Forecasts



## AO Index: Observed & GEFS Forecasts

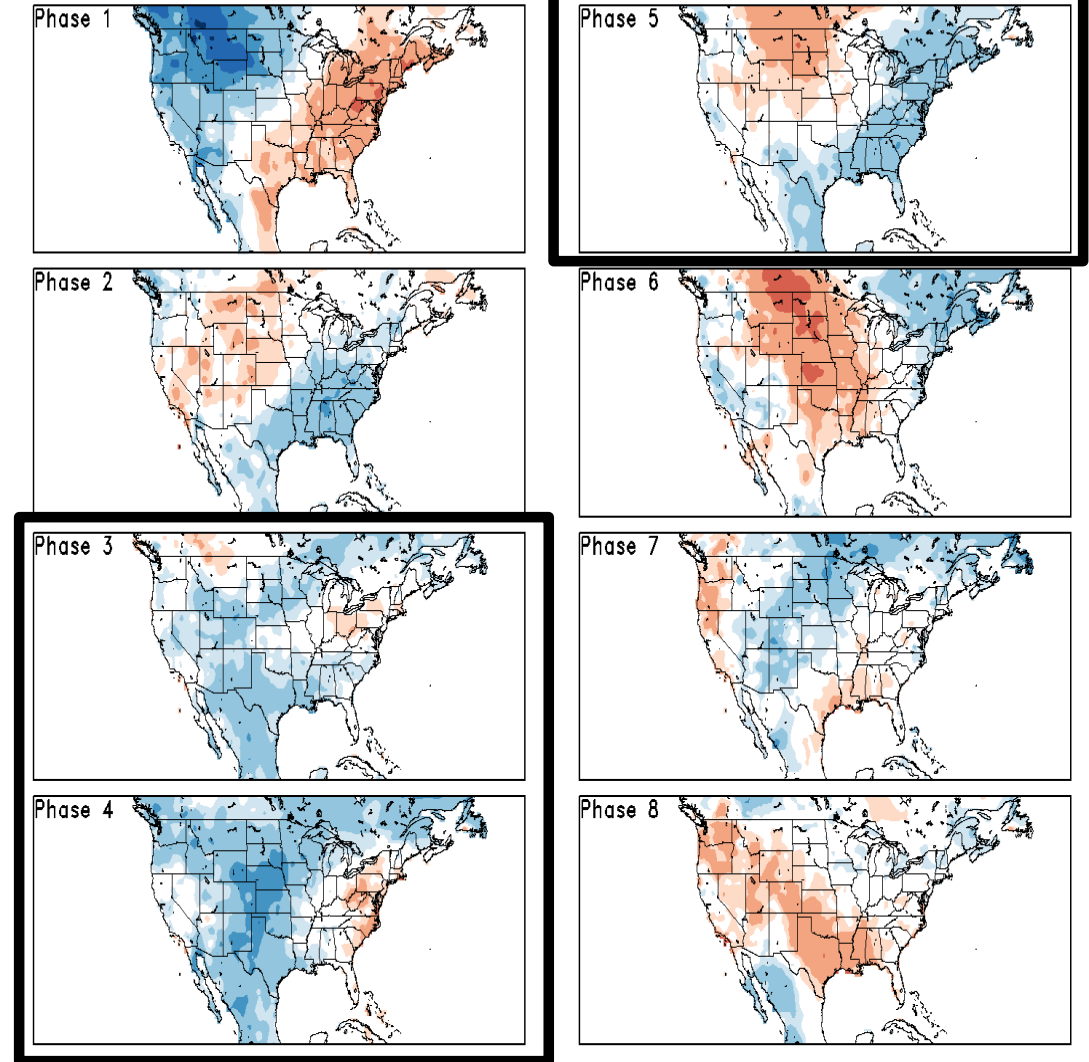
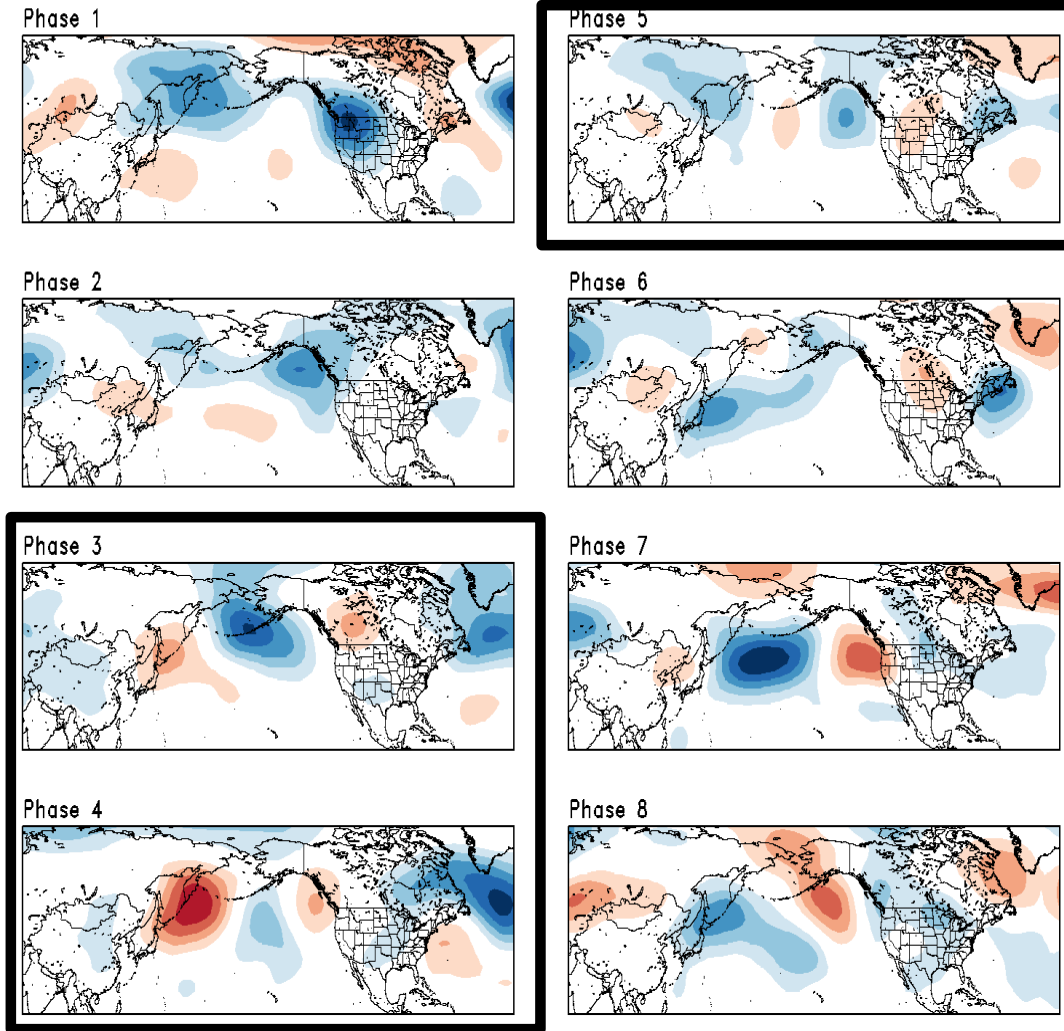




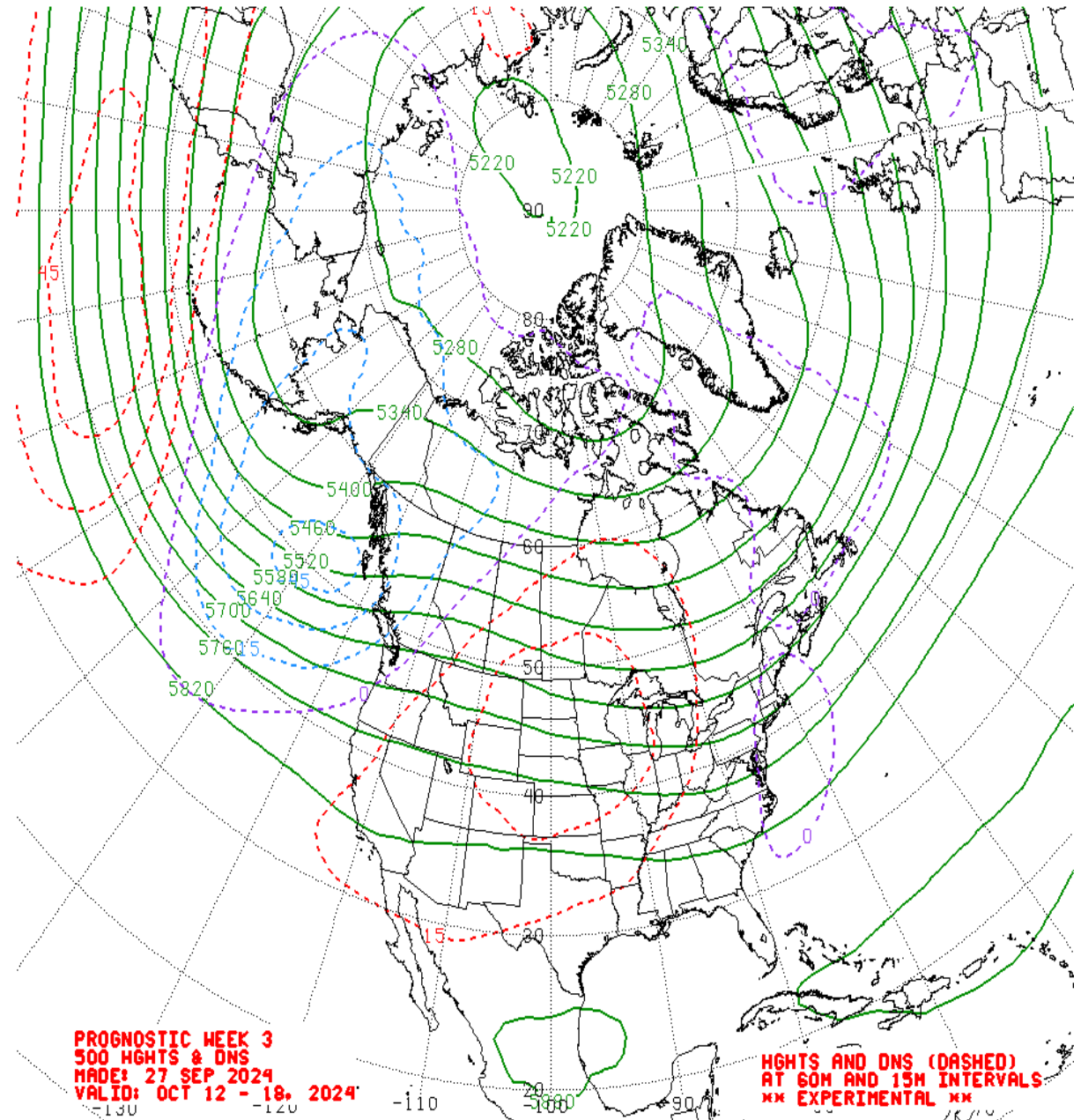
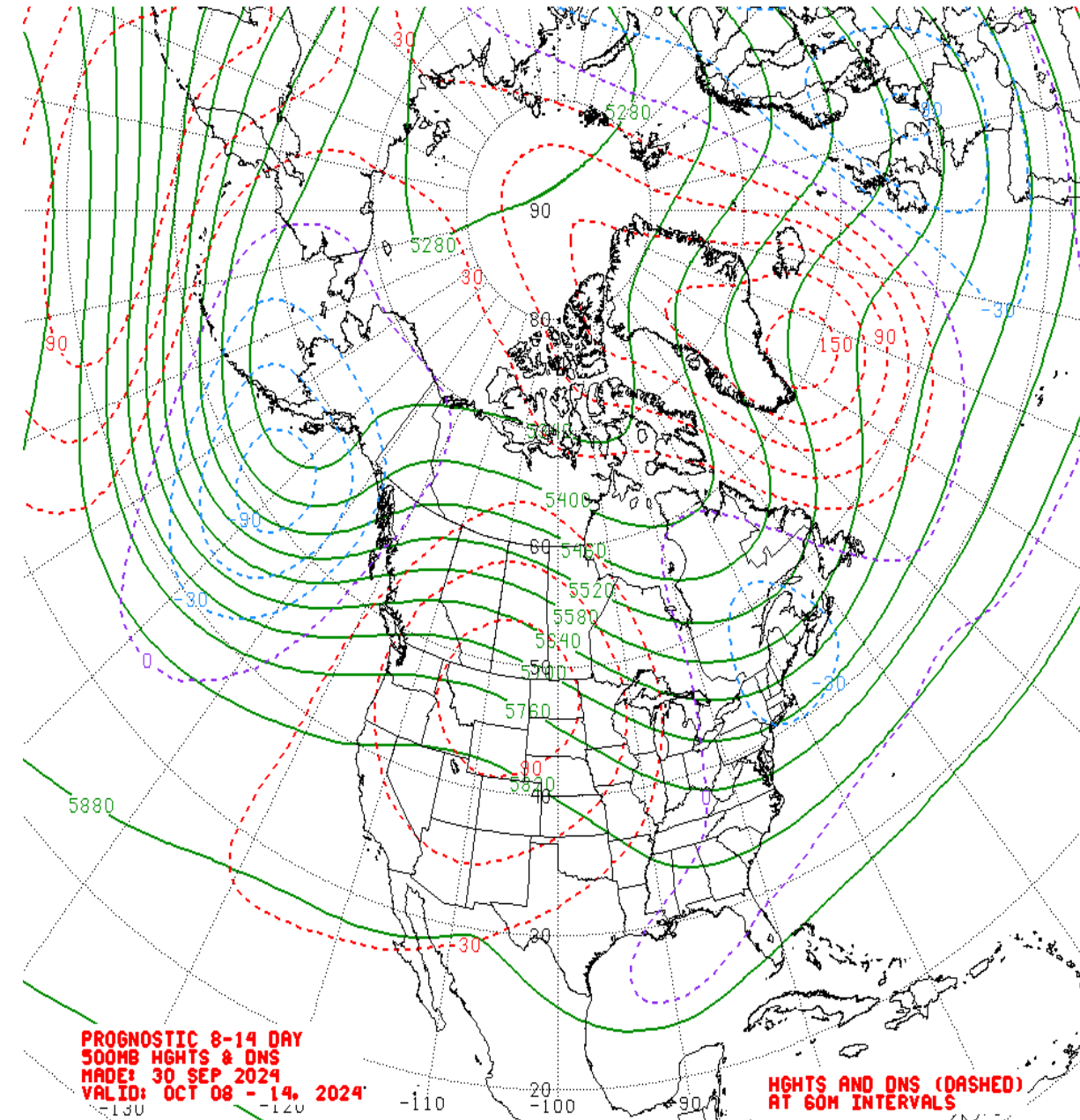
# Historical 500-hPa Height & U.S. Temperatures By MJO Phase:

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

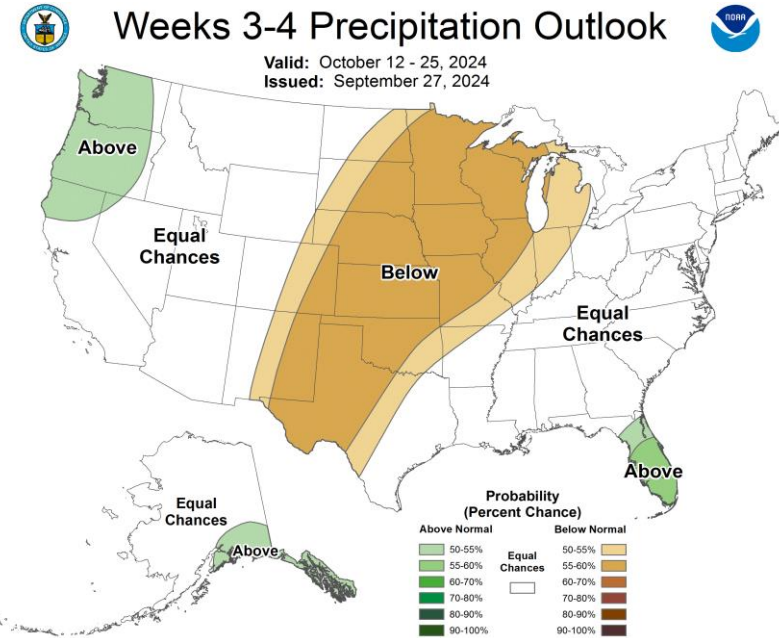
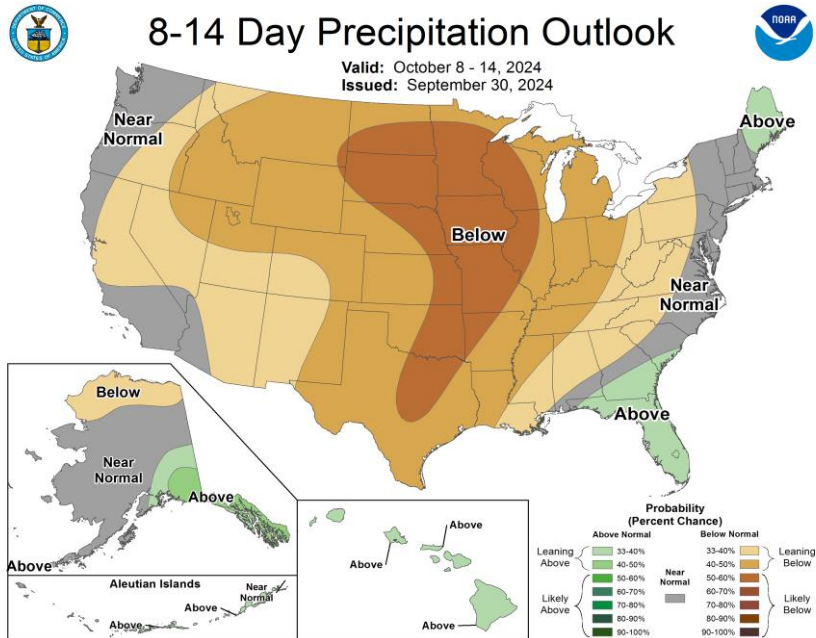
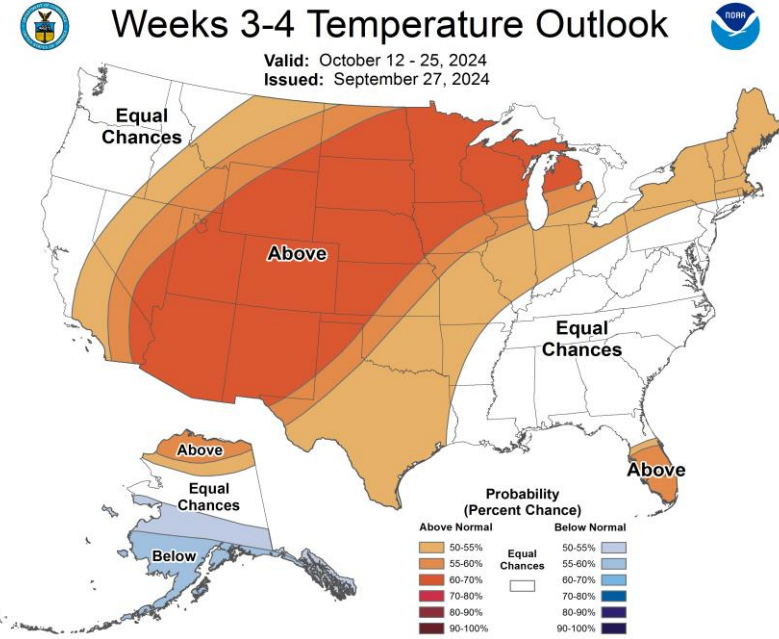
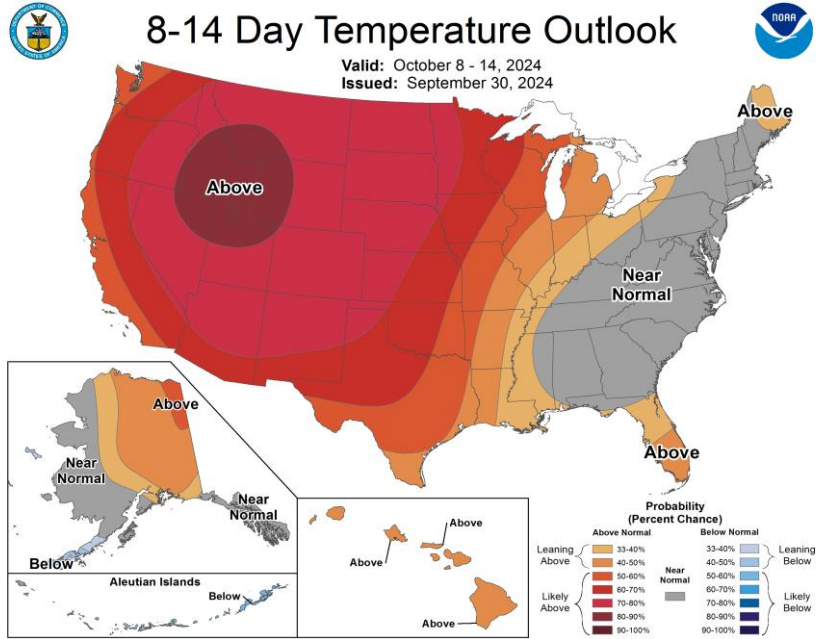
SON MJO Composite: GLBT (degC)



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



# Official Temperature & Precipitation Forecasts:





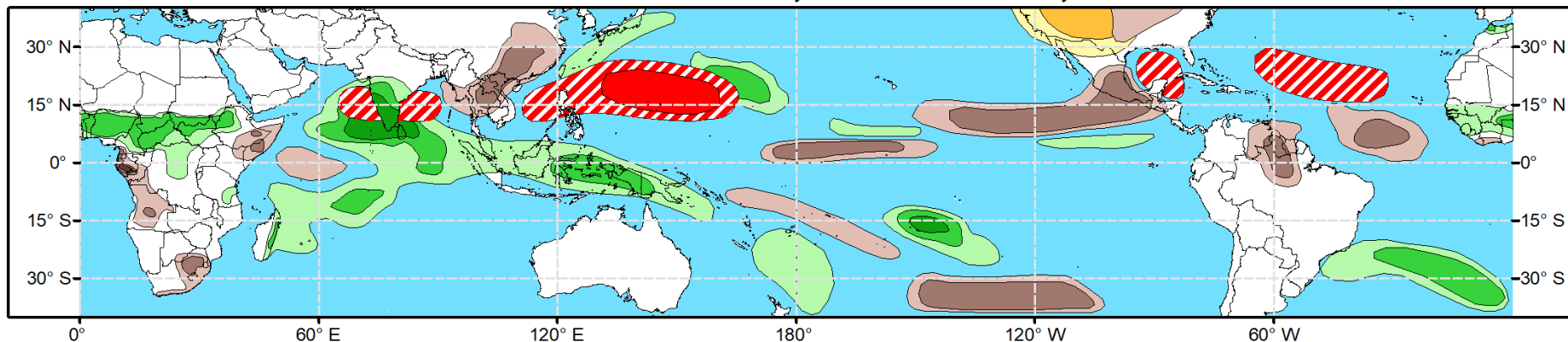


# Global Tropics Hazards Outlook

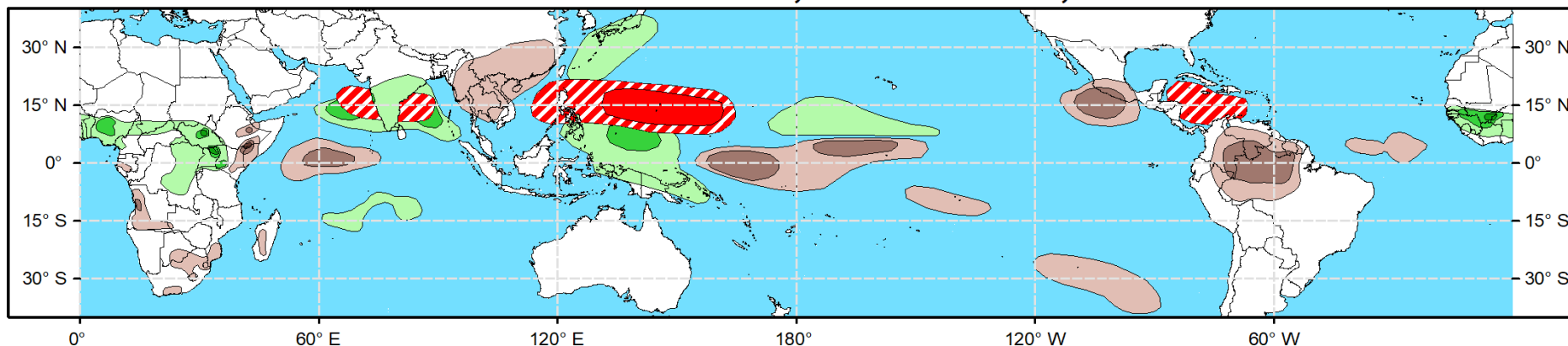
Climate Prediction Center



## Week 2 - Valid: Oct 09, 2024 - Oct 15, 2024



## Week 3 - Valid: Oct 16, 2024 - Oct 22, 2024



**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: 10/01/2024  
Forecaster: Collow**

**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.**