

# Global Tropics Hazards And Benefits Outlook

10/13/2020

Dan Harnos

## Outline

1. Review of Recent Conditions
2. Synopsis of Climate Modes
3. GTH Outlook and Forecast Discussion
4. Connections to U.S. Impacts

# Outlook Review

## TS Linfa

10/10-10/11

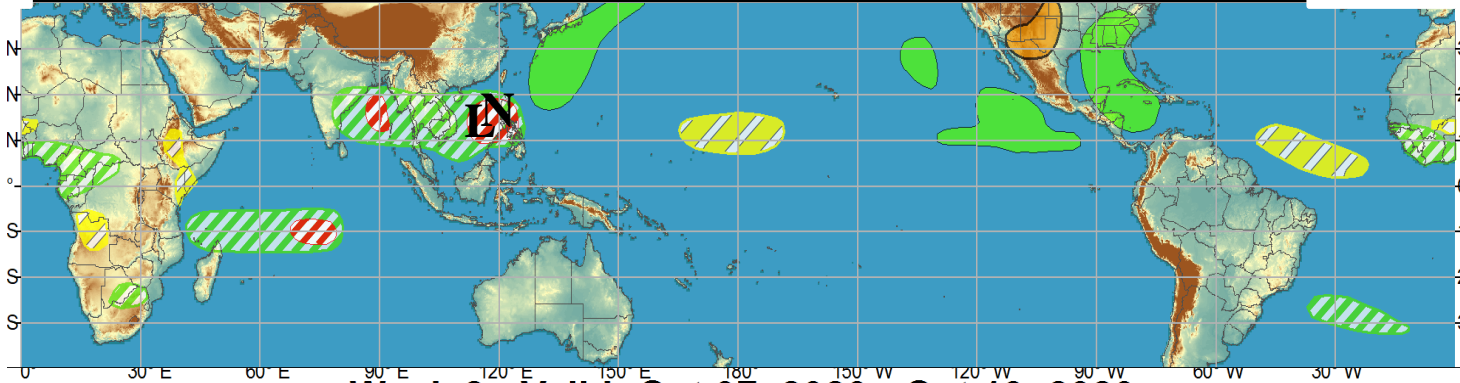
Peak: 40 kt winds

## TS Nangka

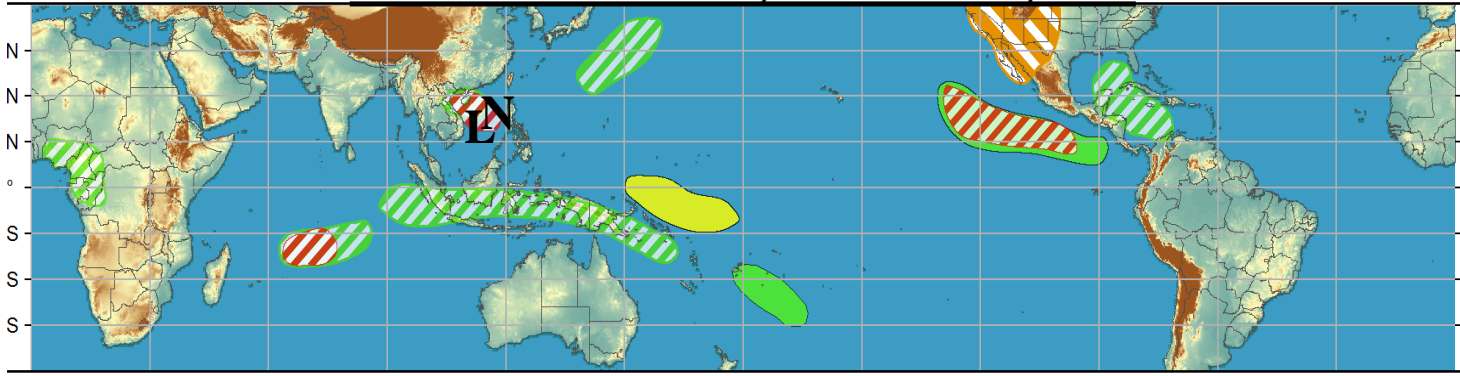
10/12-present

Peak: 50 kt winds

**Week 1 - Valid: Oct 07, 2020 - Oct 13, 2020**

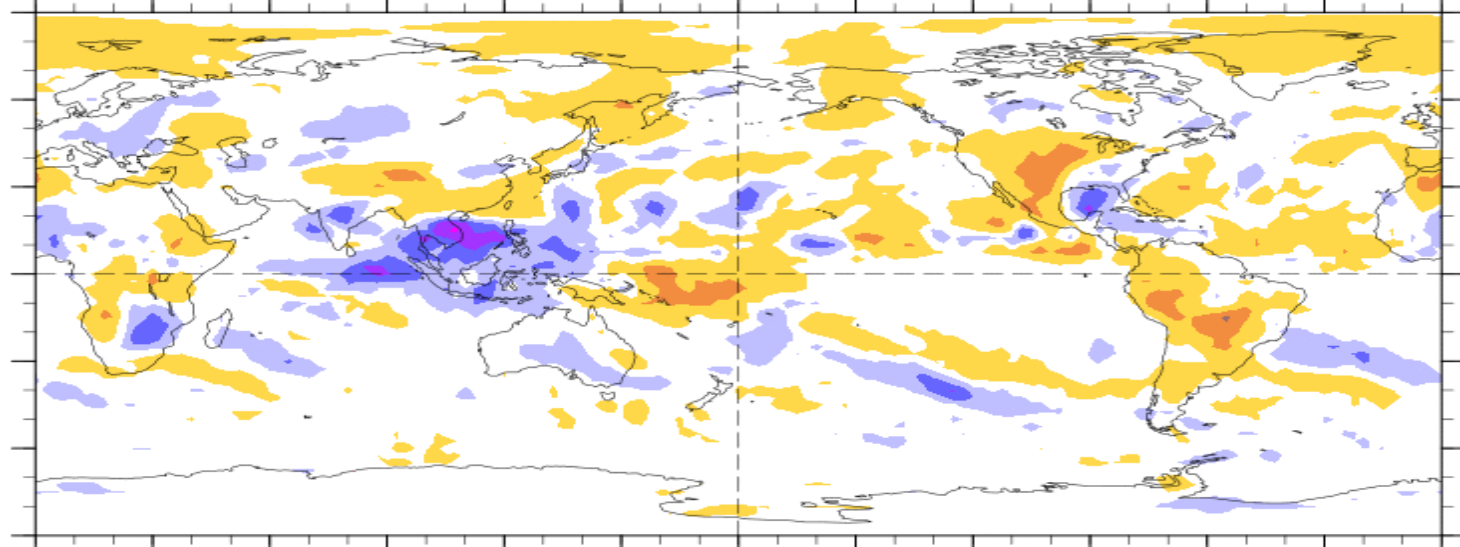


**Week 2 - Valid: Oct 07, 2020 - Oct 13, 2020**



7-Day Average OLR Anomaly

2020/10/05 - 2020/10/11



Cool shading  
More clouds/rain

Warm shading  
Less clouds/rain

# Synopsis of Climate Modes

**ENSO: (October 8, 2020 Update)**

*next update on the 12<sup>th</sup> of Nov.*

- ENSO Alert System Status: [La Niña Advisory](#)
- La Niña is likely to continue through the Northern Hemisphere winter 2020-21 (~85% chance) and into spring 2021 (~60% chance during February-April).

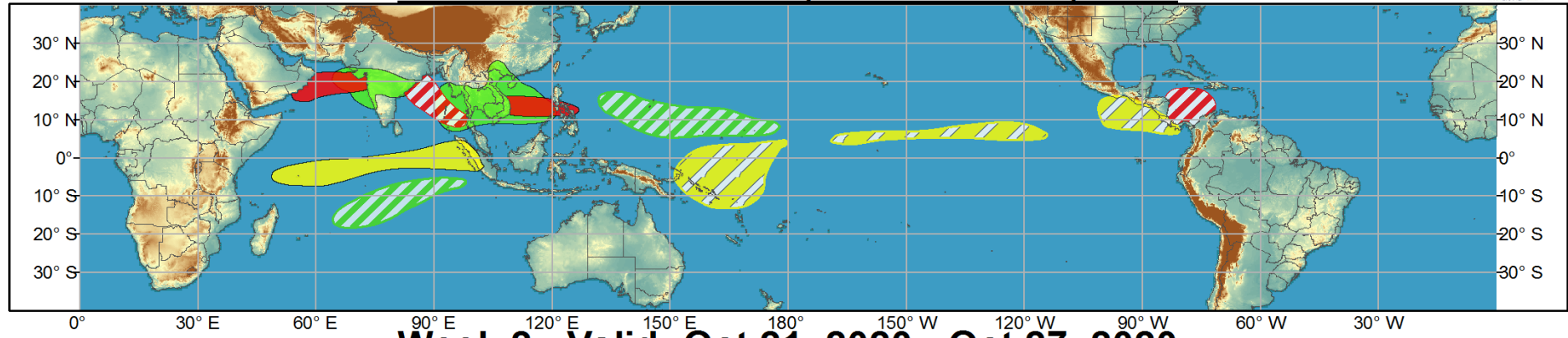
**MJO and other subseasonal tropical variability:**

- The MJO persisted over the Maritime Continent during the past week, stalled by numerous equatorial Rossby waves over the Eastern Hemisphere.
- Despite continued Rossby wave activity forecast across the Eastern Hemisphere, model guidance shows the MJO reaching the West Pacific by Week-2 at a robust amplitude. This would destructively interfere with the La Niña background state. Some ensemble members shift the MJO rapidly to the Western Hemisphere, which are likely tied to Kelvin wave activity.
- Substantial uncertainty in the intraseasonal state and fate/relevance of the MJO exists the next two weeks. Tropical cyclone activity is likely to continue to be increased across the Eastern Hemisphere tied to the multitude of equatorial Rossby waves. The aforementioned Kelvin wave may increase TC formation odds for the East Pacific during Week-1 and Western Caribbean during Week-2.

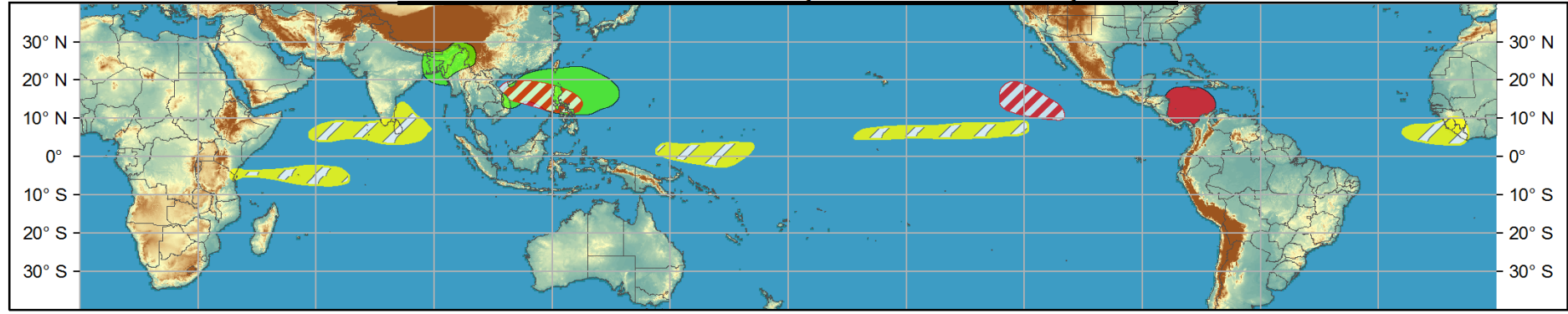


# Global Tropics Hazards and Benefits Outlook - Climate Prediction Center

## Week 1 - Valid: Oct 14, 2020 - Oct 20, 2020



## Week 2 - Valid: Oct 21, 2020 - Oct 27, 2020



Produced: 10/13/2020  
Forecaster: Harnos

Confidence		
High	Moderate	
<b>Tropical Cyclone Formation</b>		Development of a tropical cyclone (tropical depression - TD, or greater strength).
<b>Above-average rainfall</b>		Weekly total rainfall in the upper third of the historical range.
<b>Below-average rainfall</b>		Weekly total rainfall in the lower third of the historical range.
<b>Above-normal temperatures</b>		7-day mean temperatures in the upper third of the historical range.
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# IR Satellite & 200-hpa Velocity Potential Anomalies

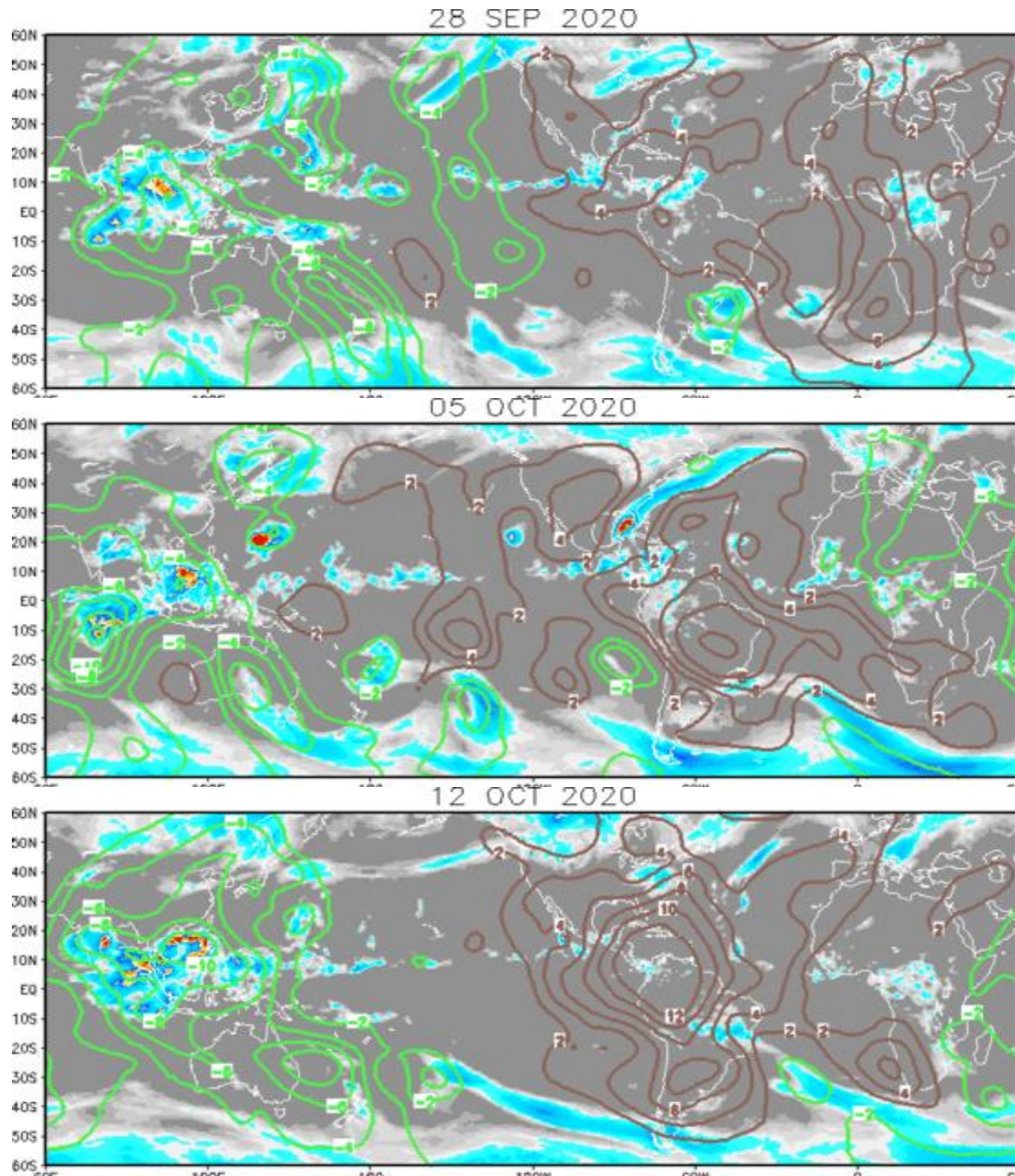
Green: Enhanced Divergence

Brown: Enhanced Convergence

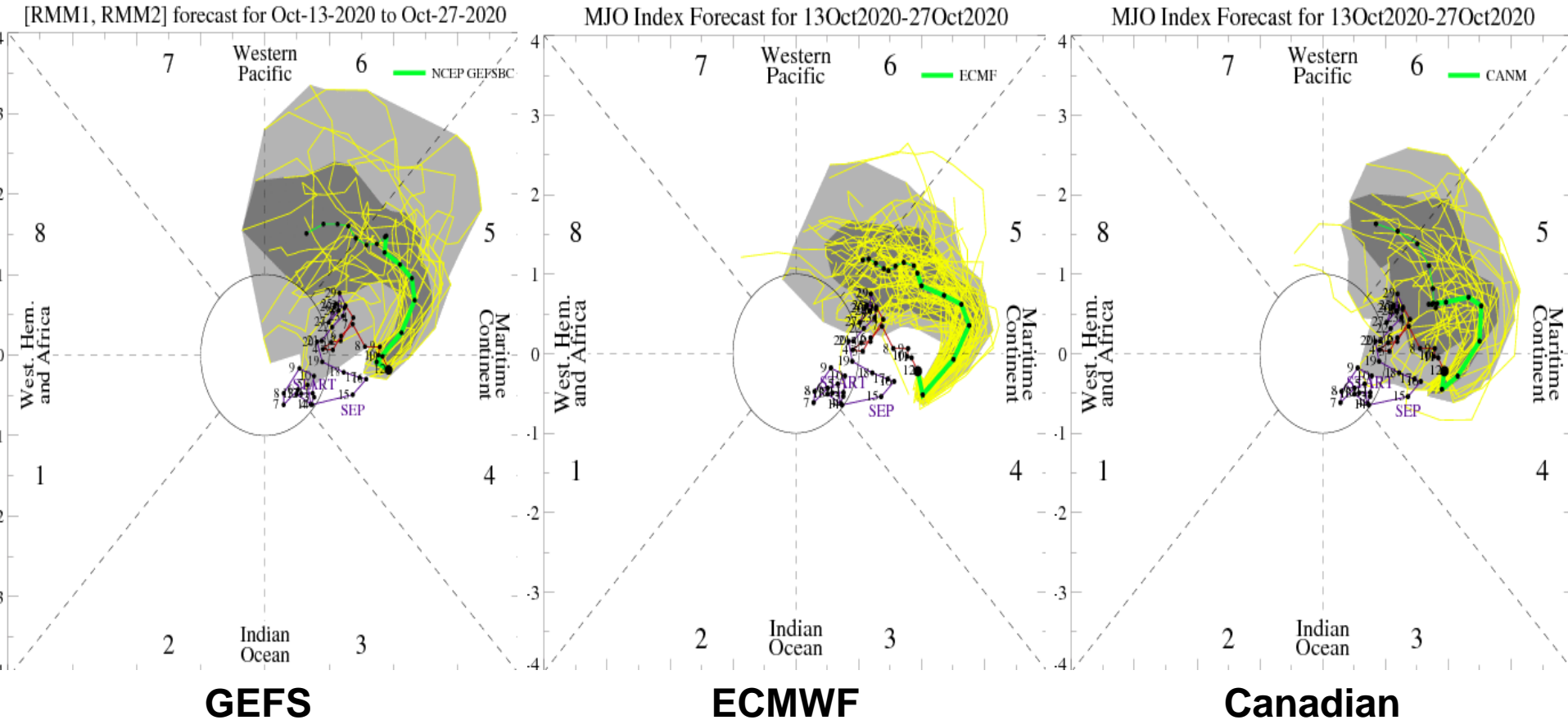
Enhanced (suppressed) convection over the Eastern (Western) Hemisphere in a wave-1 pattern.

Little to no propagation of the pattern, and if anything maybe it shifts westward. Little coherence over the Tropical Pacific.

Increased organization, but still little to no large-scale movement.



# MJO Observation/Forecast

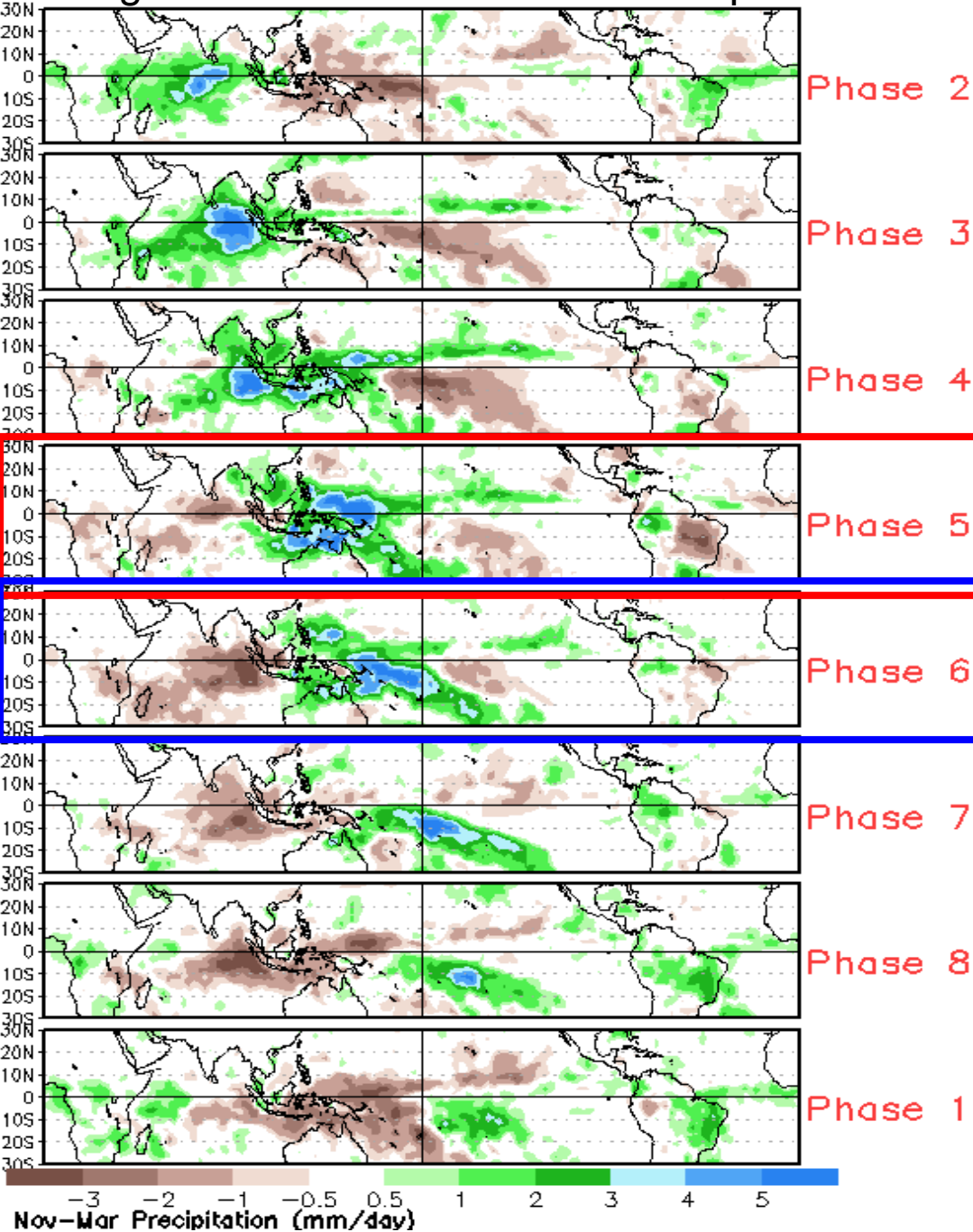


All three models show eastward propagation across the Maritime Continent throughout Week-1 and over the West Pacific during Week-2.

Discrepancies arise in strength of the MJO by individual members, despite the fairly consistent solution among the averages among each model.

Some faster members reaching Phase 7 may be emphasizing a Kelvin wave over the Pacific/Americas.

# Average Conditions when the MJO is present



Week-1: Phase 5

Week-2: Phase 6

Concerns for departures:

- Rossby wave activity
- La Nina (destructive interference)

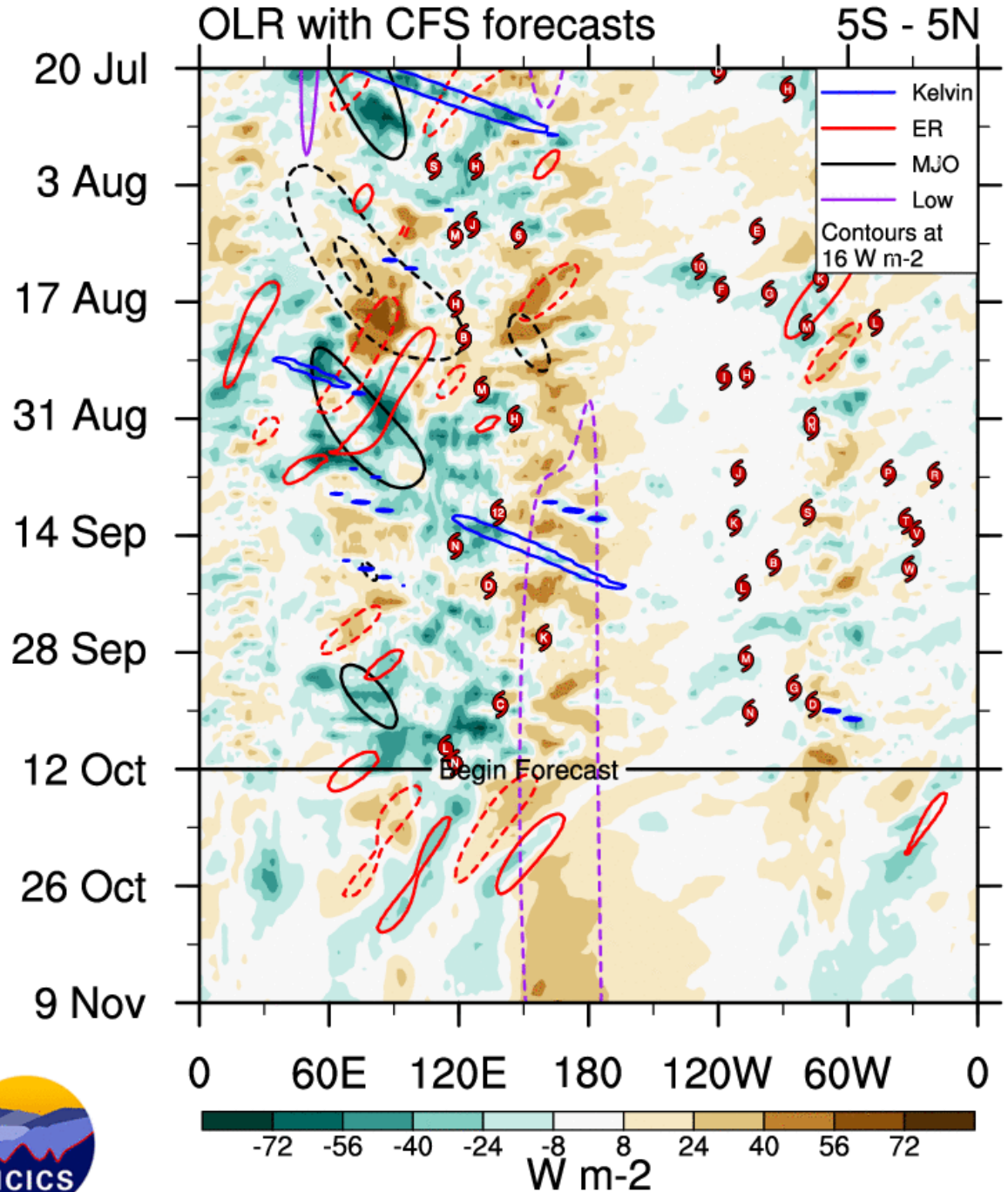
CAVEAT: These panels are representative of robust MJO events.



No objective tropical convective modes are analyzed near 120°E but this is likely due to the number of modes present rather than a quiet pattern. Smaller westward moving features are likely **equatorial Rossby waves**, while the broader eastern moving envelope is likely the **MJO**.

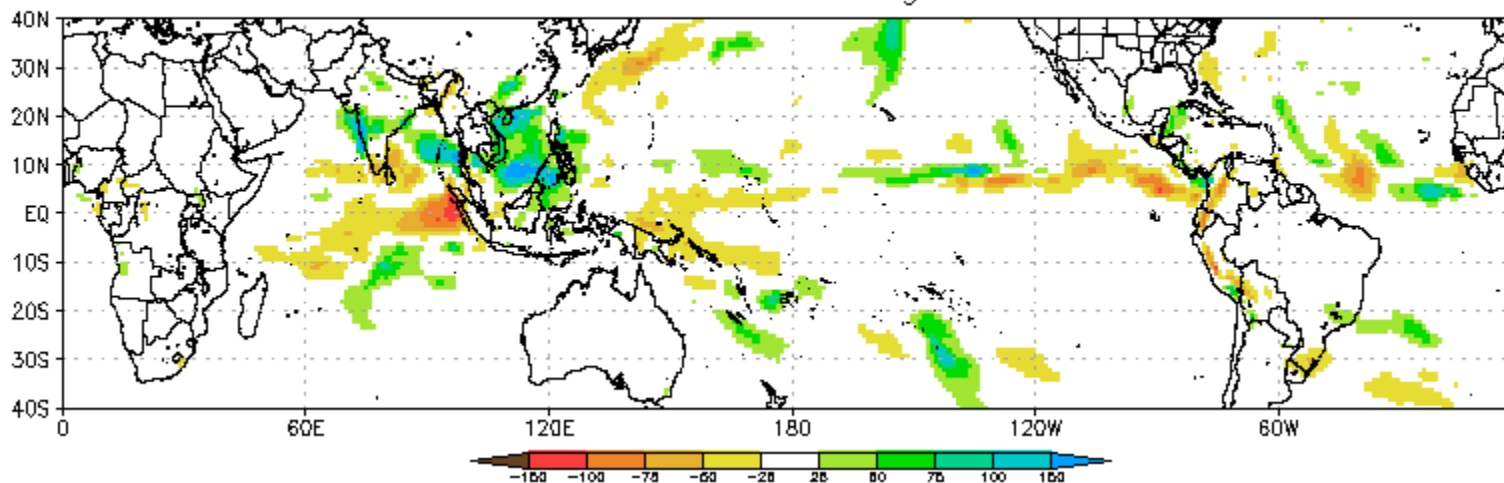
Note the forecast data shows continued **equatorial Rossby wave** activity over the Eastern Hemisphere.

The **low frequency state** (La Niña) continues to suppress convection west of the Date Line.

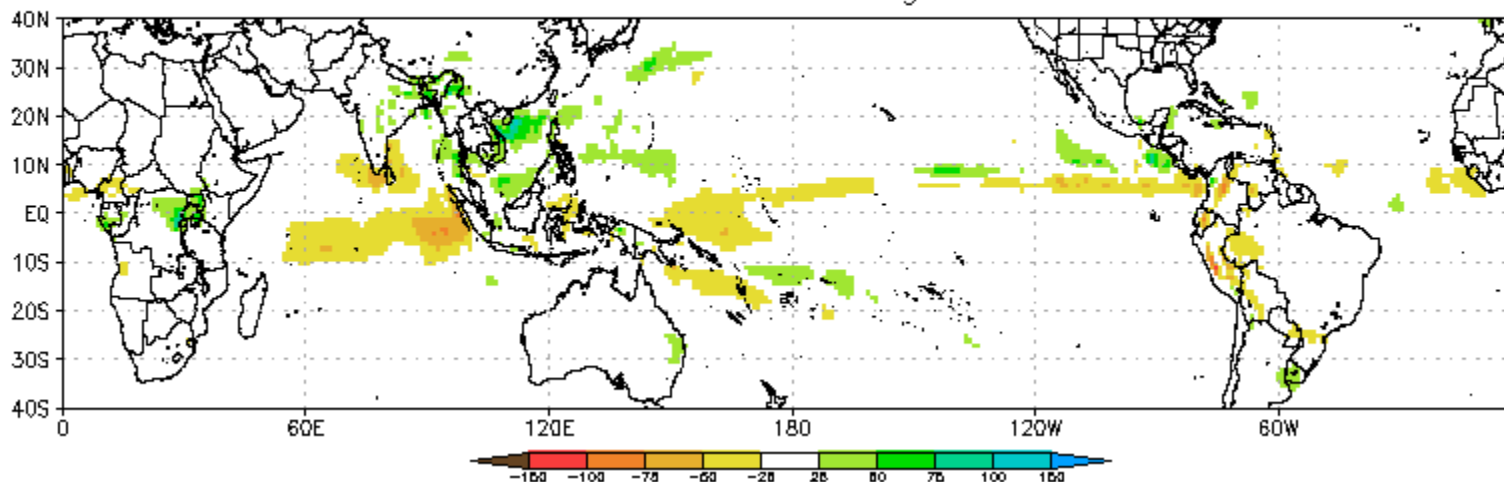




CFS Precipitation Anomalies (mm) Issued 12Oct2020  
Week-1 Forecast Ending 20Oct2020

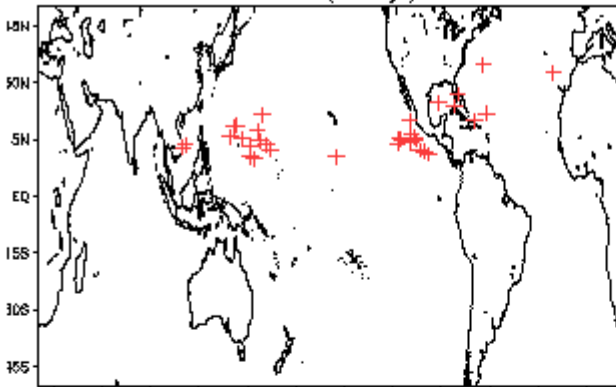


CFS Precipitation Anomalies (mm) Issued 12Oct2020  
Week-2 Forecast Ending 27Oct2020

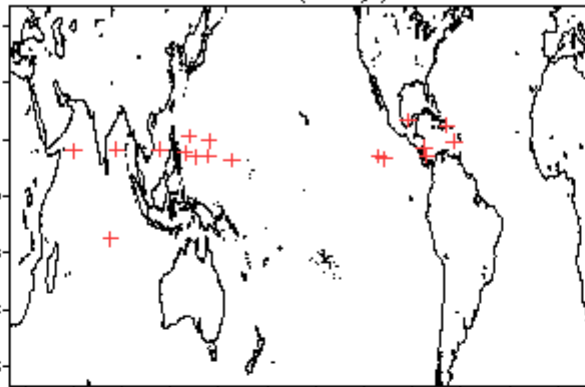


# October Tropical Storm Formation by MJO phase

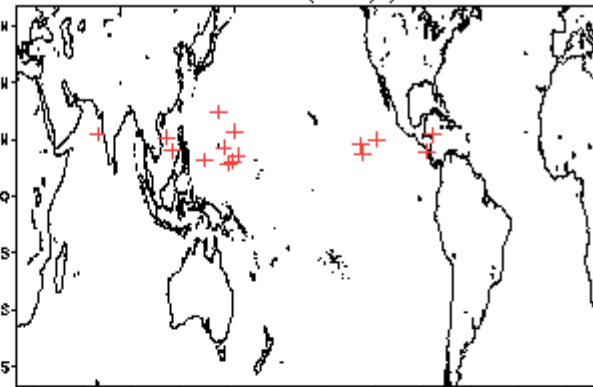
Phase 1 (94 days) 34 storms



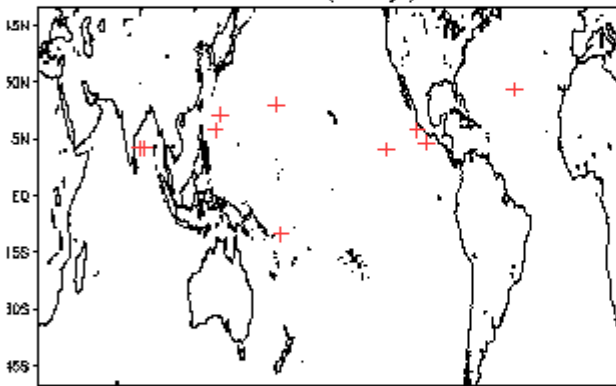
Phase 4 (85 days) 18 storms



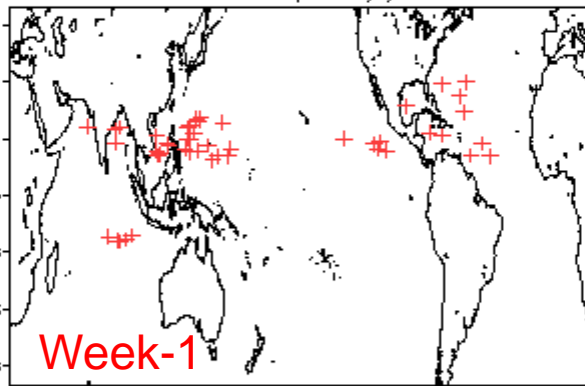
Phase 7 (49 days) 16 storms



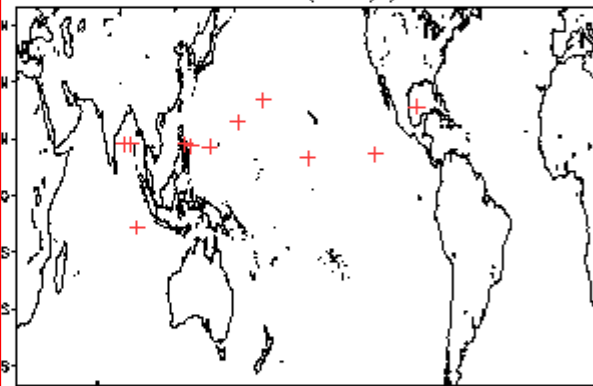
Phase 2 (75 days) 11 storms



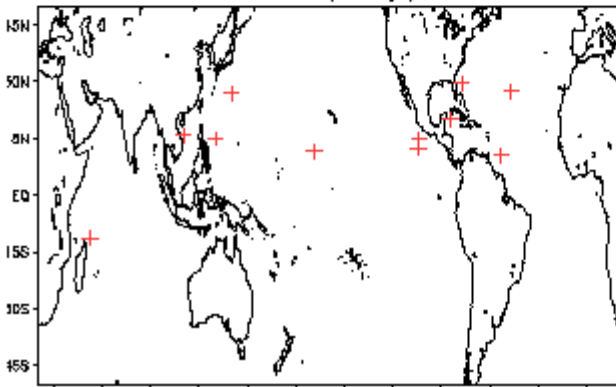
Phase 5 (133 days) 48 storms



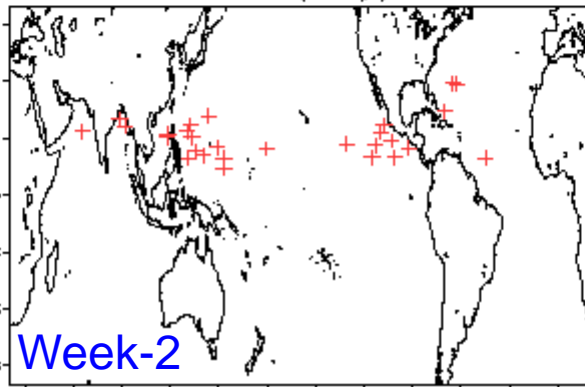
Phase 8 (66 days) 12 storms



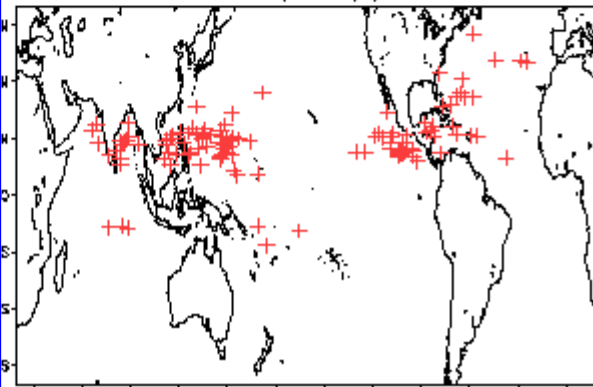
Phase 3 (41 days) 12 storms



Phase 6 (78 days) 30 storms



Null (422 days) 119 storms

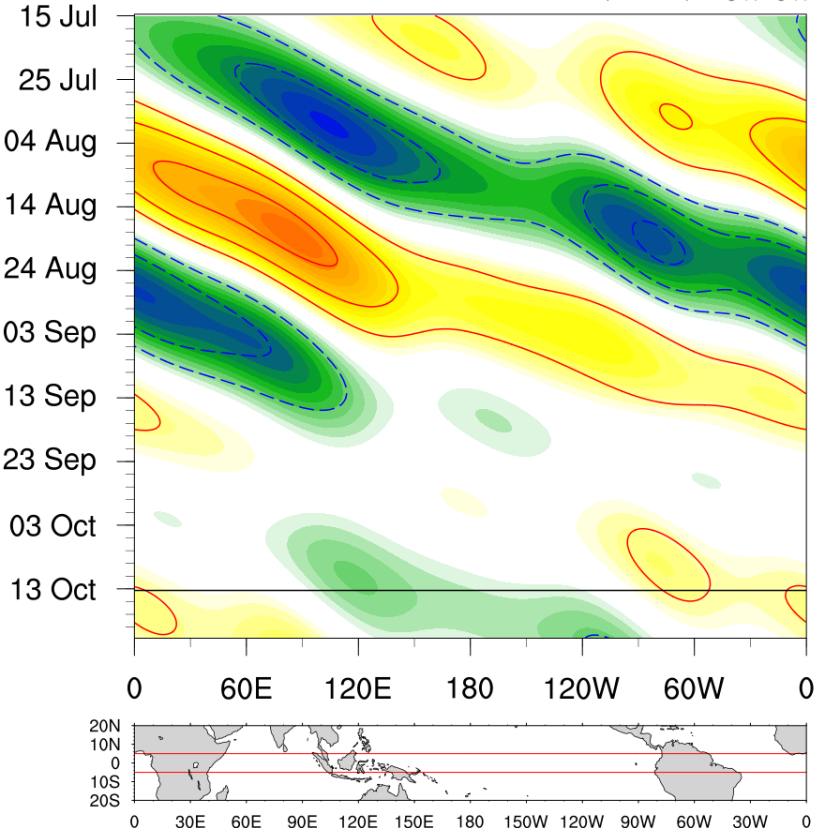


# MJO contributions to environment

# Kelvin wave contributions to environment

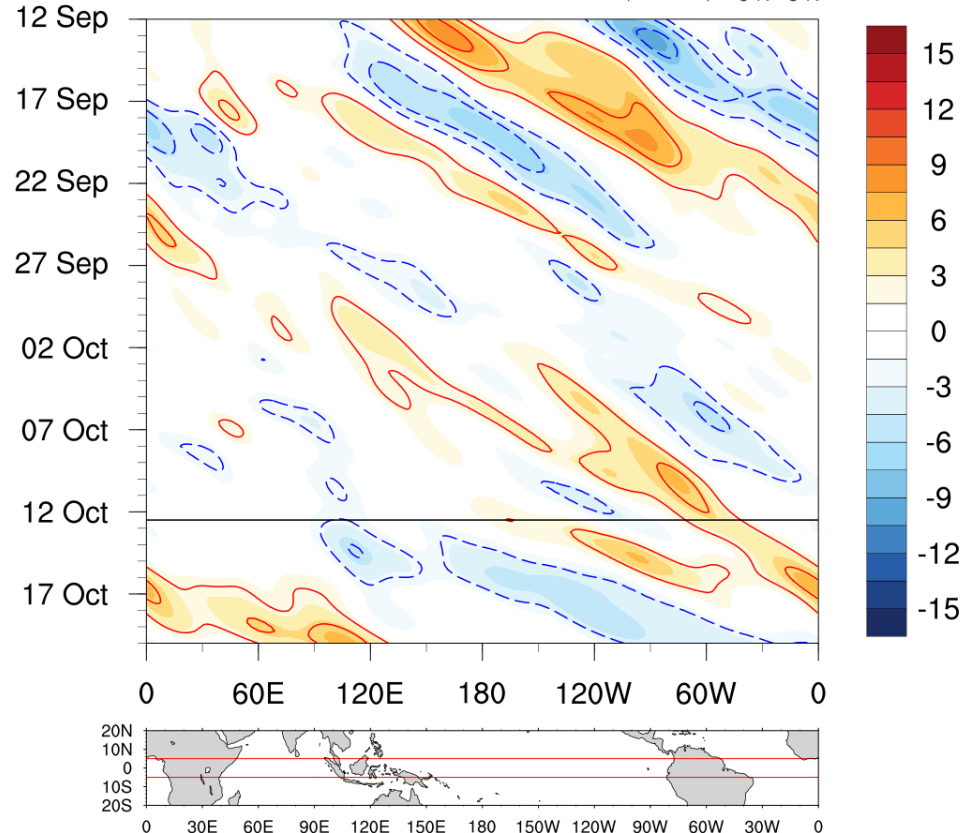
GFS Forecast  
2020-10-13 0600

MJO-filtered 200 hPa VP anomalies (shaded) [ $10^6 \text{ m}^2 \text{ s}^{-1}$ ]  
std anomalies of MJO-filtered 200 hPa VP anomalies (contours) -5°N - 5°N



GFS Forecast  
2020-10-13 0600

kelvin-filtered 200 hPa VP anomalies (shaded) [ $10^6 \text{ m}^2 \text{ s}^{-1}$ ]  
std anomalies of kelvin-filtered 200 hPa VP anomalies (contours) -5°N - 5°N

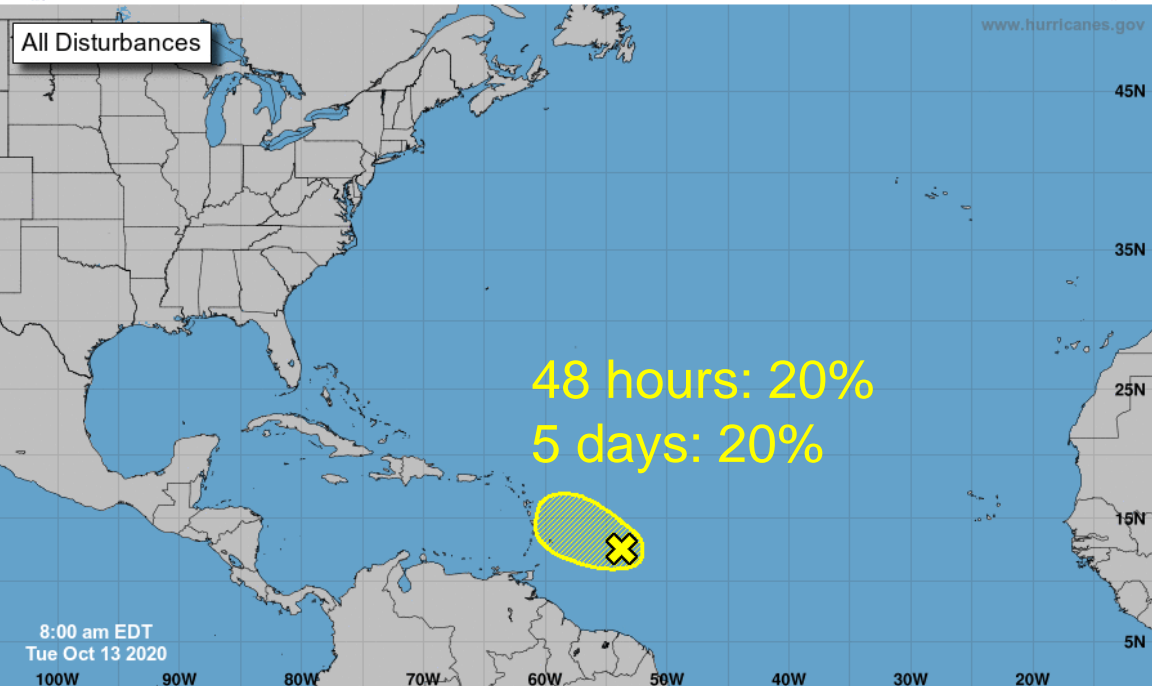


Blues/Greens: More favorable for convection/TC development  
Oranges/Yellows: Less favorable for convection/TC development



# Five-Day Graphical Tropical Weather Outlook

National Hurricane Center Miami, Florida



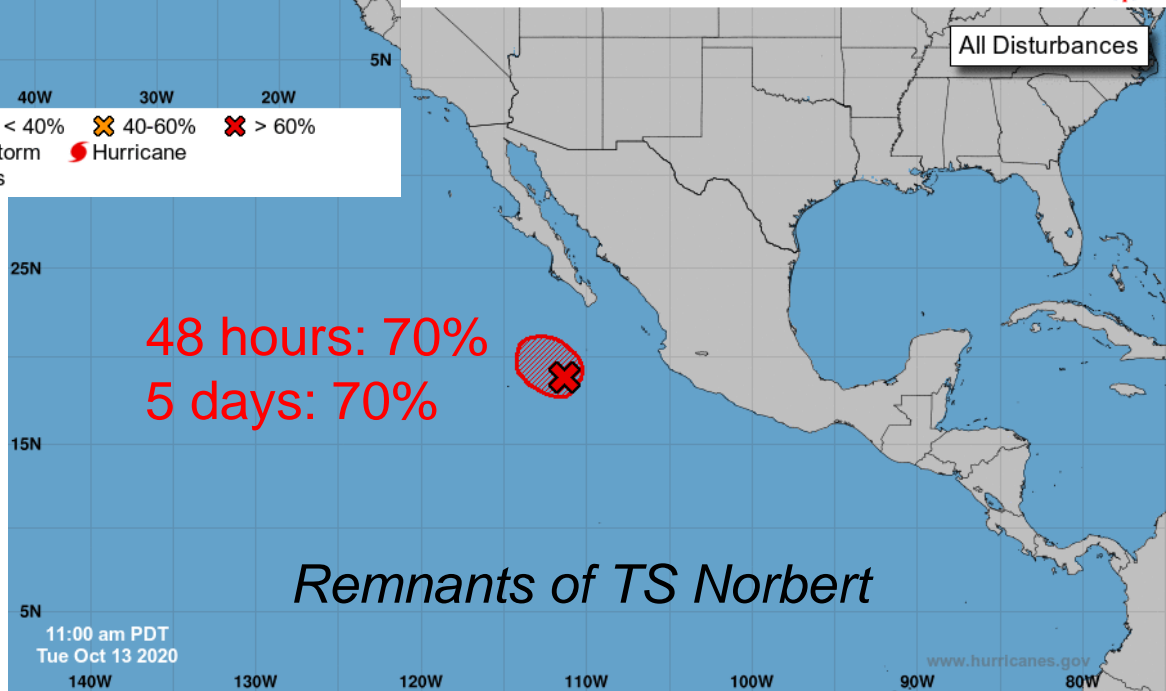
Current Disturbances and Five-Day Cyclone Formation Chance: < 40% 40-60% > 60%

Tropical or Sub-Tropical Cyclone: Depression Storm Hurricane

Post-Tropical Cyclone or Remnants

## Graphical Tropical Weather Outlook

National Hurricane Center Miami, Florida



Current Disturbances and Five-Day Cyclone Formation Chance: < 40% 40-60% > 60%

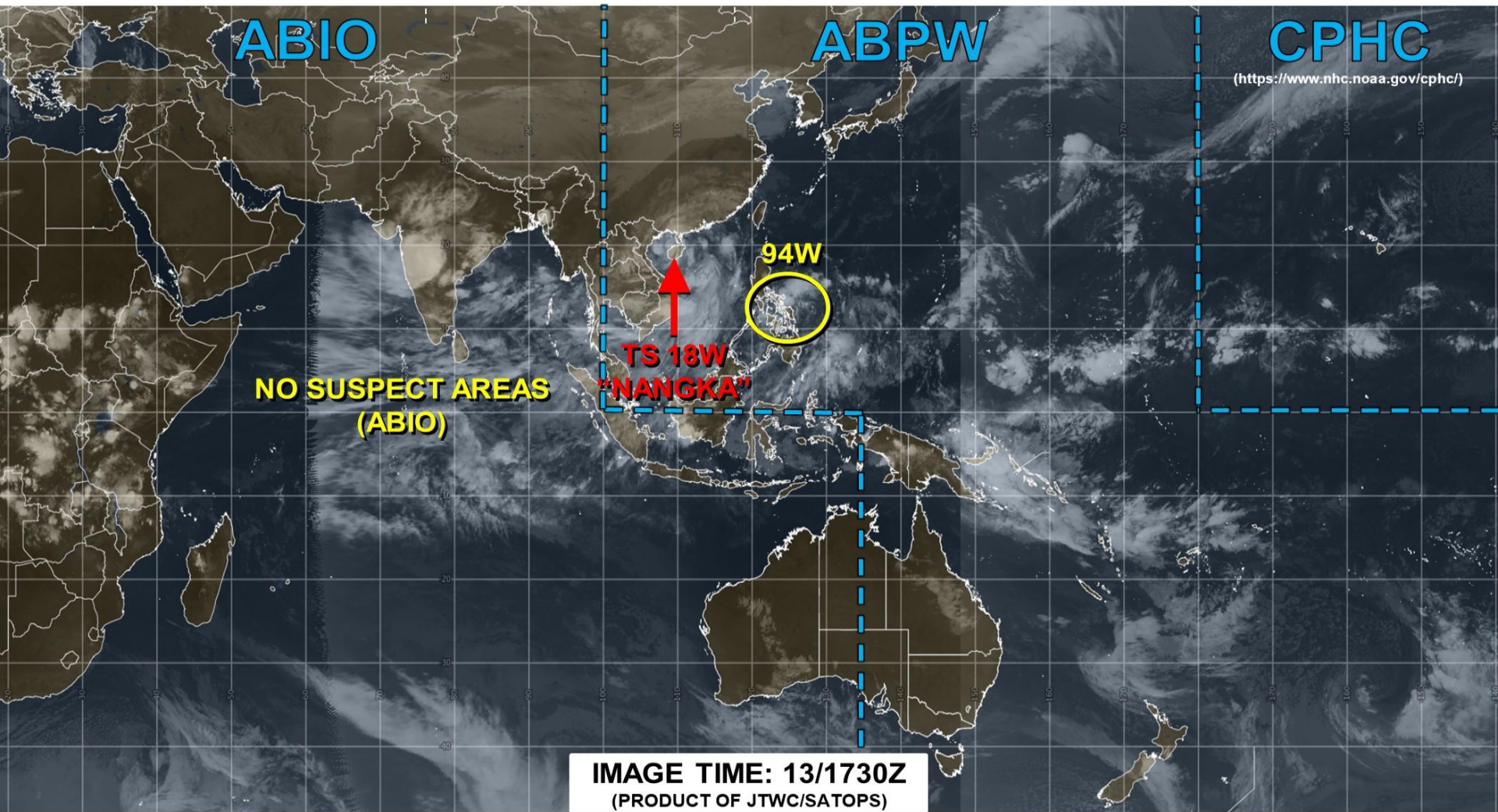
Tropical or Sub-Tropical Cyclone: Depression Storm Hurricane

Post-Tropical Cyclone or Remnants





# JOINT TYPHOON WARNING CENTER



**LOW** TC development unlikely within 24 hours

**MEDIUM** TC development likely, but expected to occur beyond 24 hours

**HIGH** TC development likely within 24 hours (Reference TCFA)

**SUB TROPICAL** Monitoring for potential transition to TC. Invest color denotes tropical transition probability



# Tropical Storm Nangka


JTWC

TROPICAL STORM 18W (NANGKA) WARNING #8  
 WIPN33 PGTW 131500  
 131200Z POSIT: NEAR 19.0N 110.5E  
 MOVING 285 DEGREES TRUE AT 08 KNOTS  
 MAXIMUM SIGNIFICANT WAVE HEIGHT: 18 FEET  
 13/12Z, WINDS 050 KTS, GUSTS TO 065 KTS  
 14/00Z, WINDS 045 KTS, GUSTS TO 055 KTS  
 14/12Z, WINDS 055 KTS, GUSTS TO 070 KTS  
 15/00Z, WINDS 040 KTS, GUSTS TO 050 KTS  
 15/12Z, WINDS 030 KTS, GUSTS TO 040 KTS  
 16/12Z, WINDS 020 KTS, GUSTS TO 030 KTS

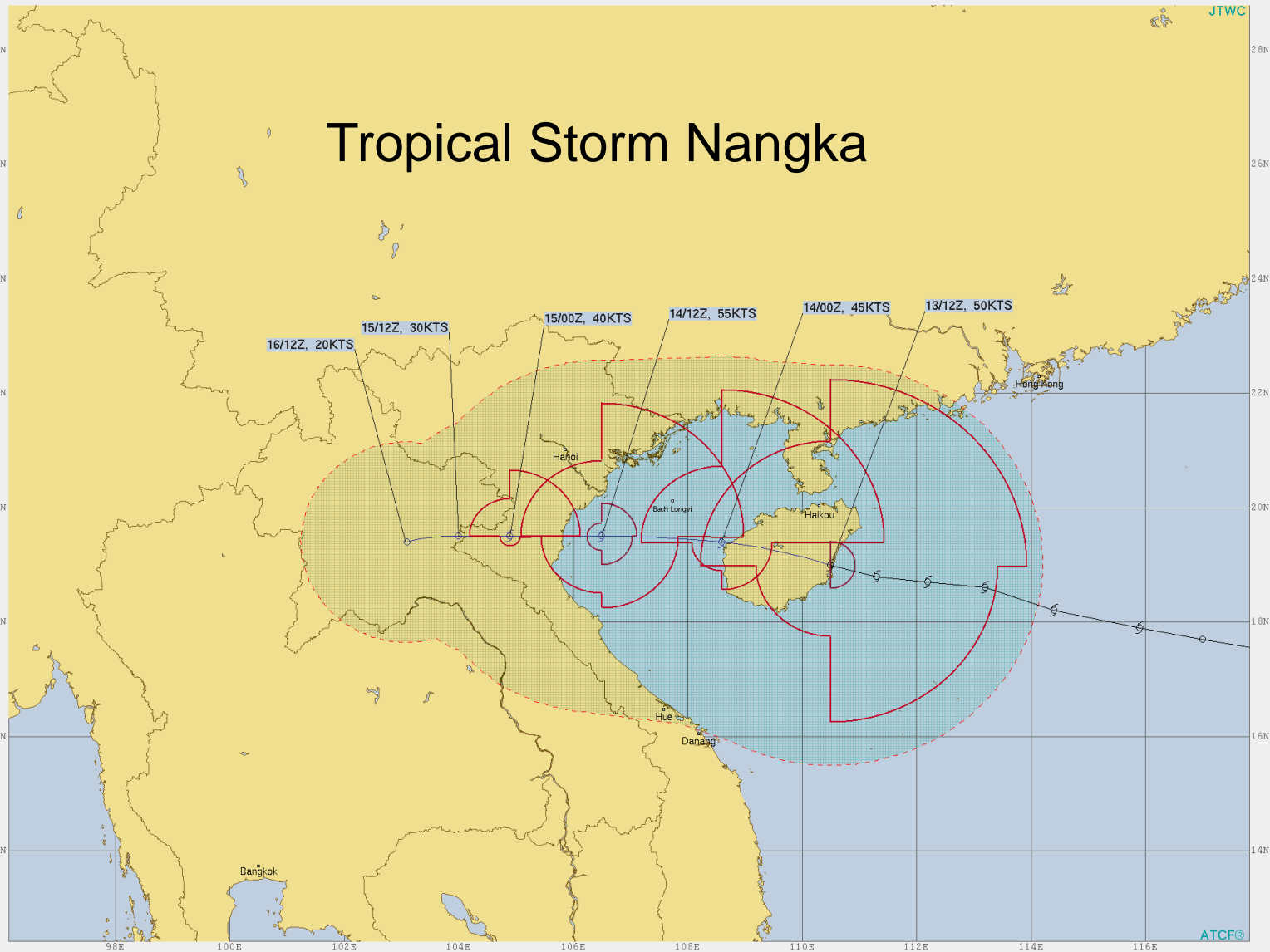
CPA TO:	NM	DTG
DA_NANG	204	13/21Z
HANOI	90	14/16Z

BEARING AND DISTANCE	DIR	DIST	TAU
		(NM)	(HRS)
DA_NANG	035	220	0
HANOI	114	286	0
HONG_KONG	227	287	0

○ ○ 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)



16/12Z, 20KTS    15/12Z, 30KTS    15/00Z, 40KTS    14/12Z, 55KTS    14/00Z, 45KTS    13/12Z, 50KTS

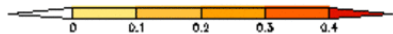
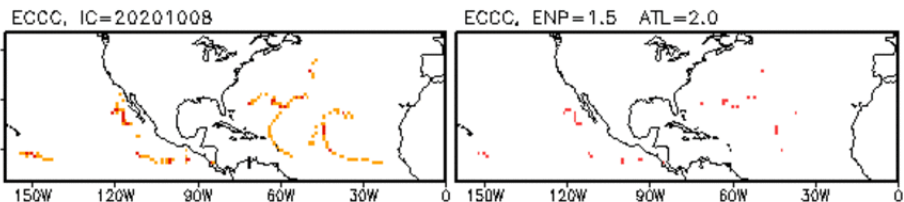
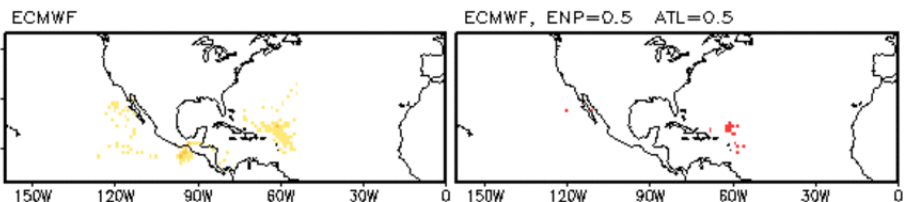
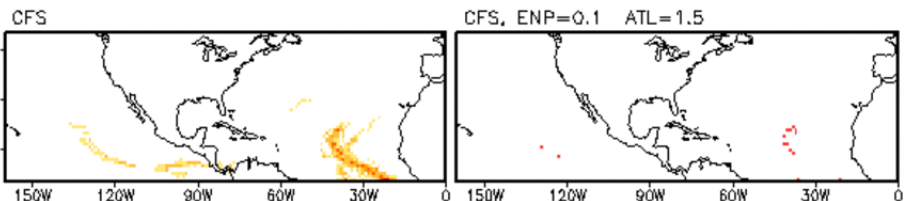


ATCF®

Storm Track Density Distribution, IC=20201012  
Week 1 Forecast: 1014-1020

TRACK DENSITY

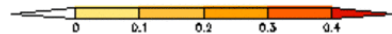
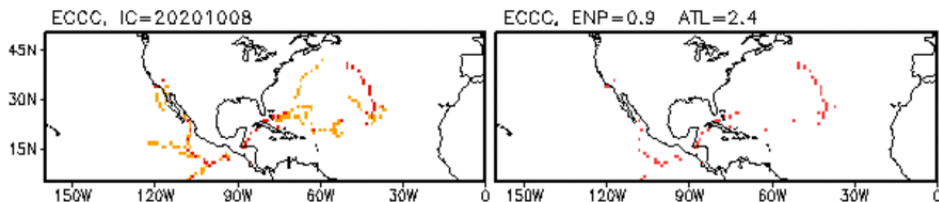
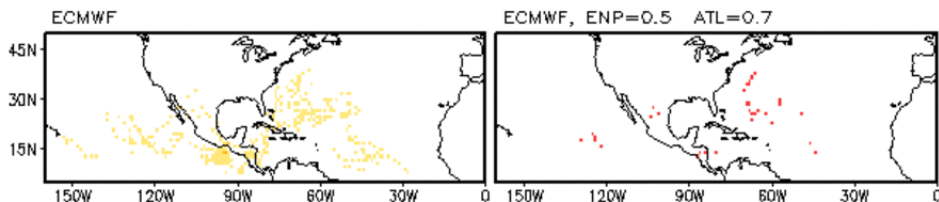
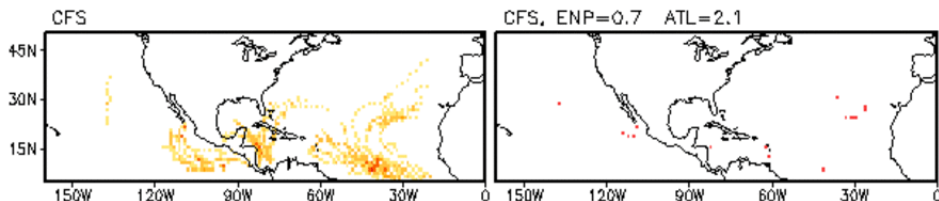
FILTERED



Storm Track Density Distribution, IC=20201012  
Week 2 Forecast: 1021-1027

TRACK DENSITY

FILTERED

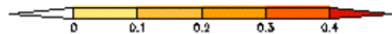
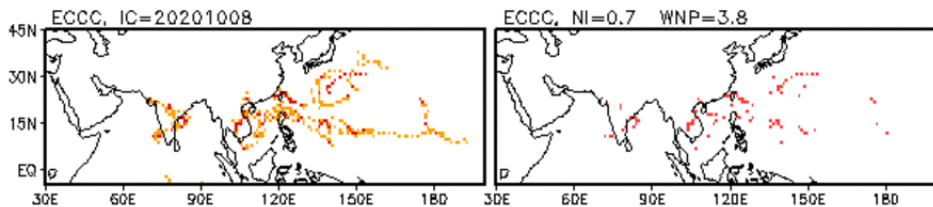
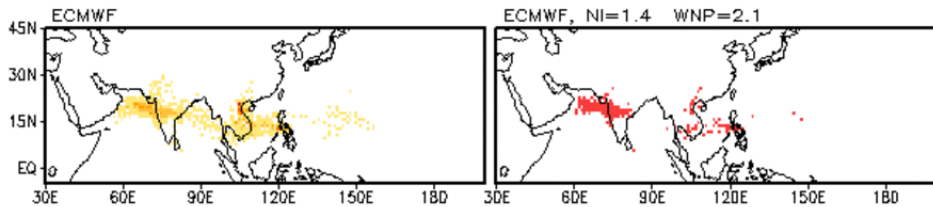
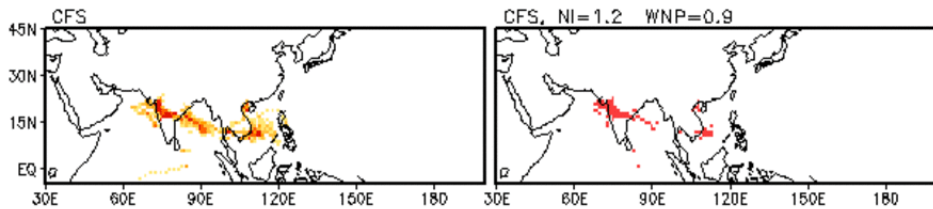




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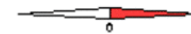
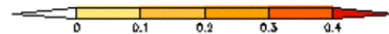
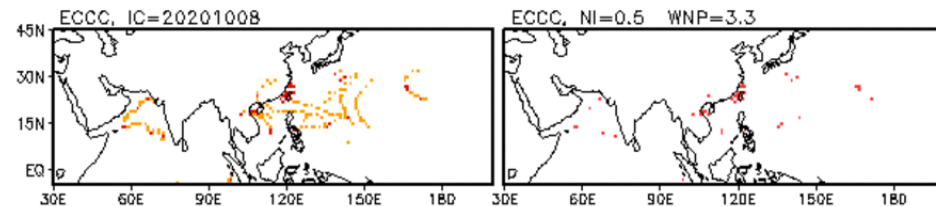
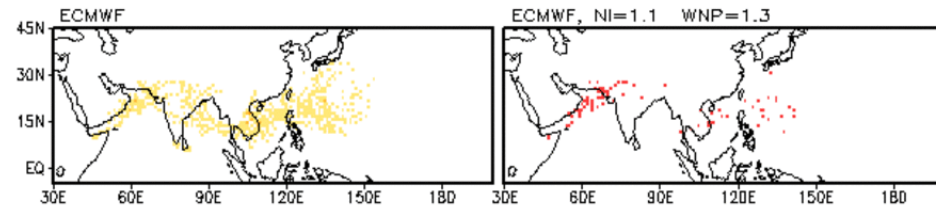
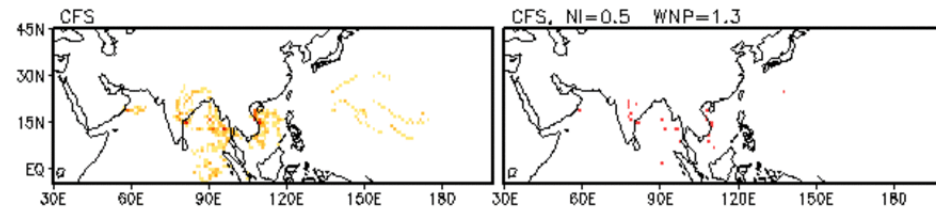
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Storm Track Density Distribution, IC=20201012  
Week 2 Forecast: 1021-1027

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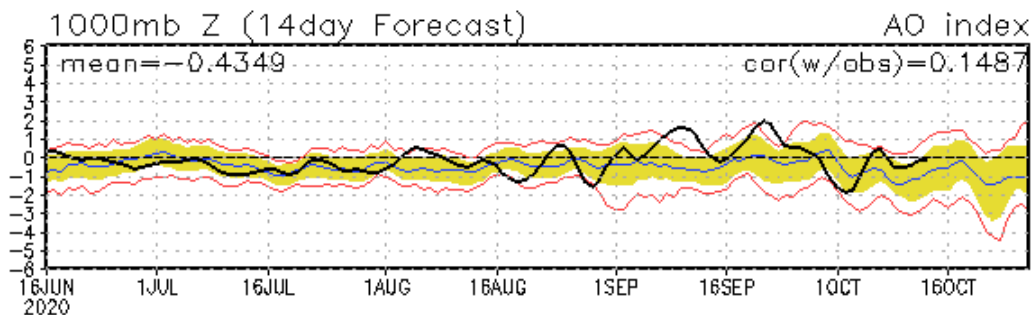
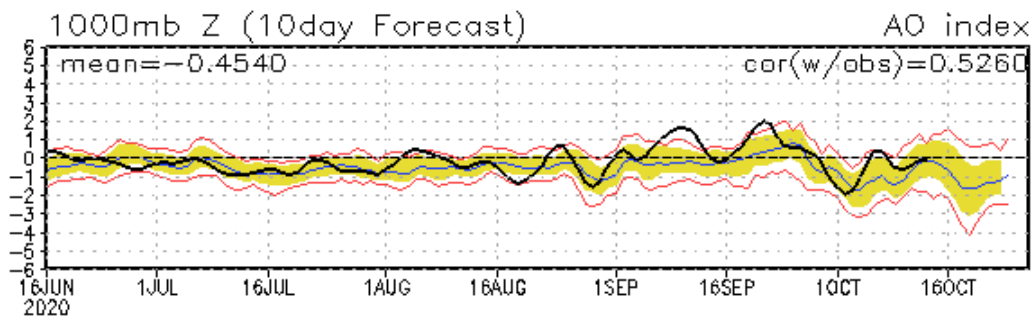
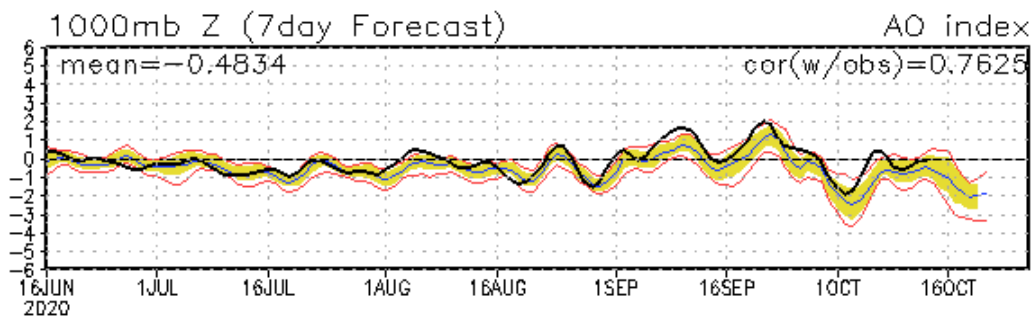
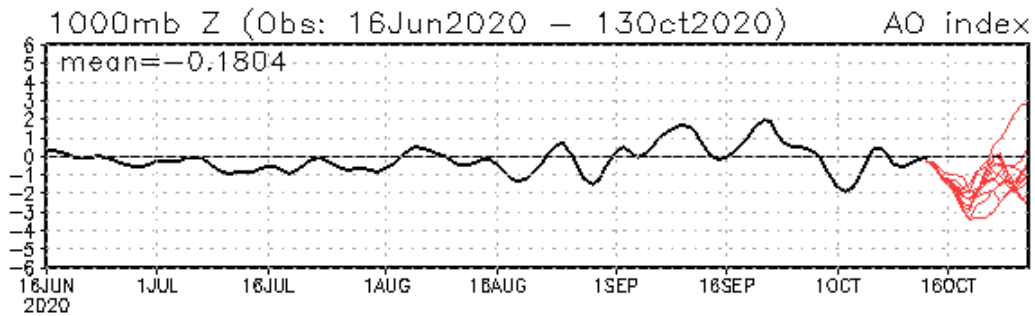
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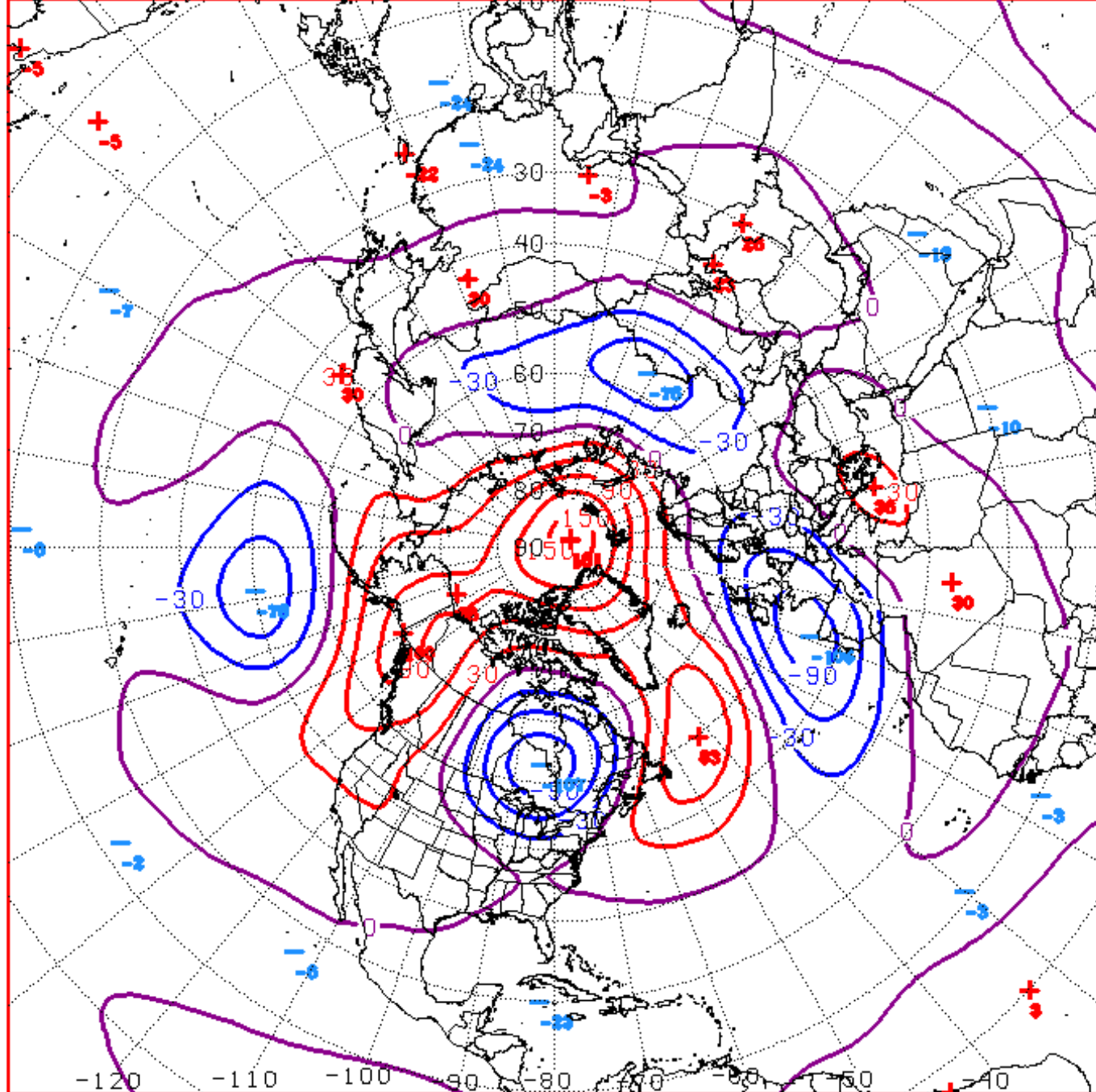




# Connections to U.S. Impacts

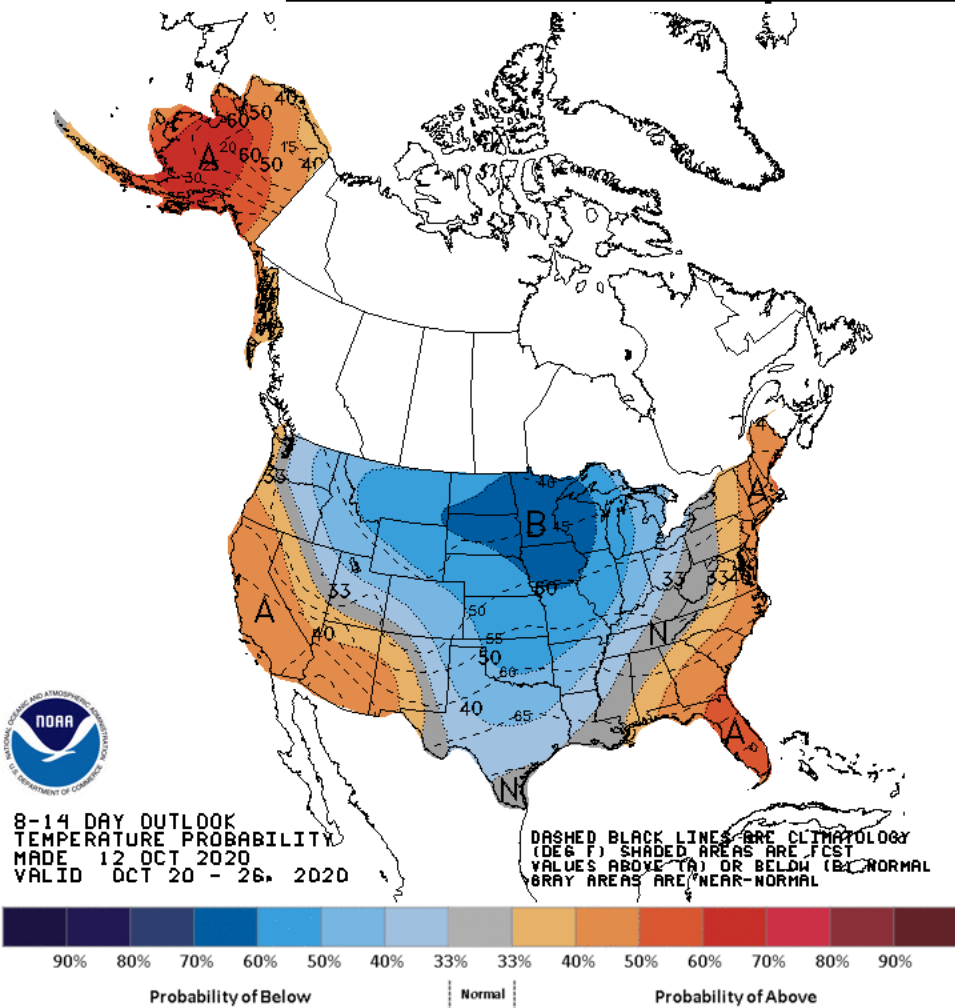
## AO: Observed & ENSM forecasts



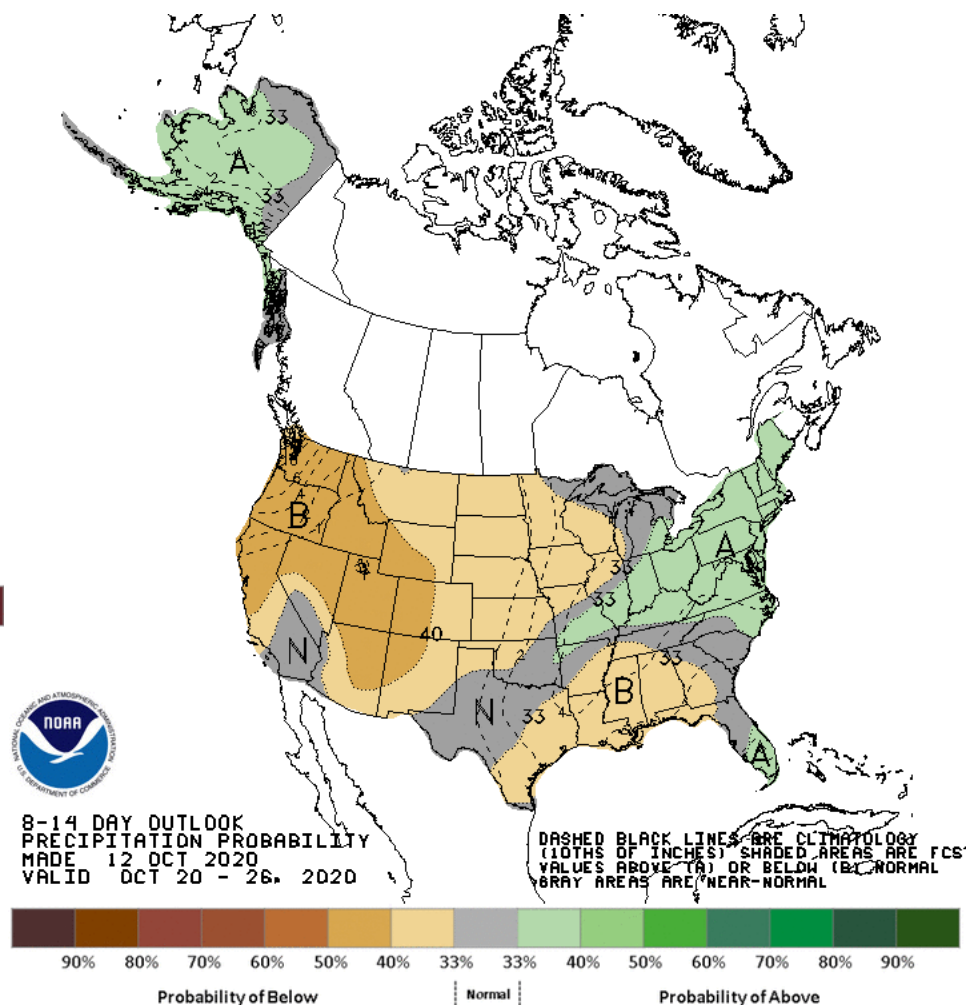


D+11 500 MB ANOMALIES FROM ALZ ENSM  
CPC MAP MADE OCT 13 2020 1412 UTC CNTD OCT 24 2020

# Week 2 – Temperature and Precipitation



Increasing confidence exists for cold air across the Central U.S., probabilities are likely to be higher for below-normal temperatures today.

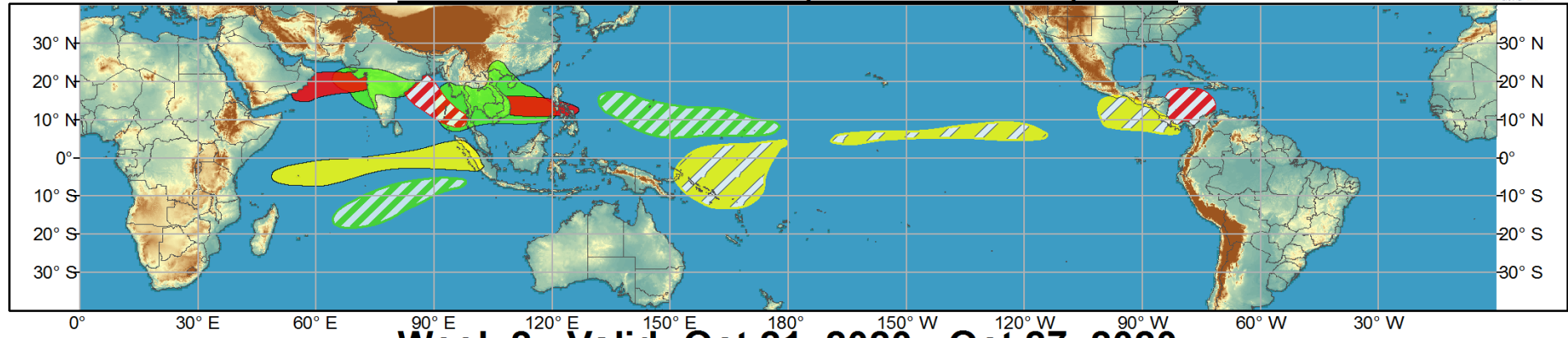




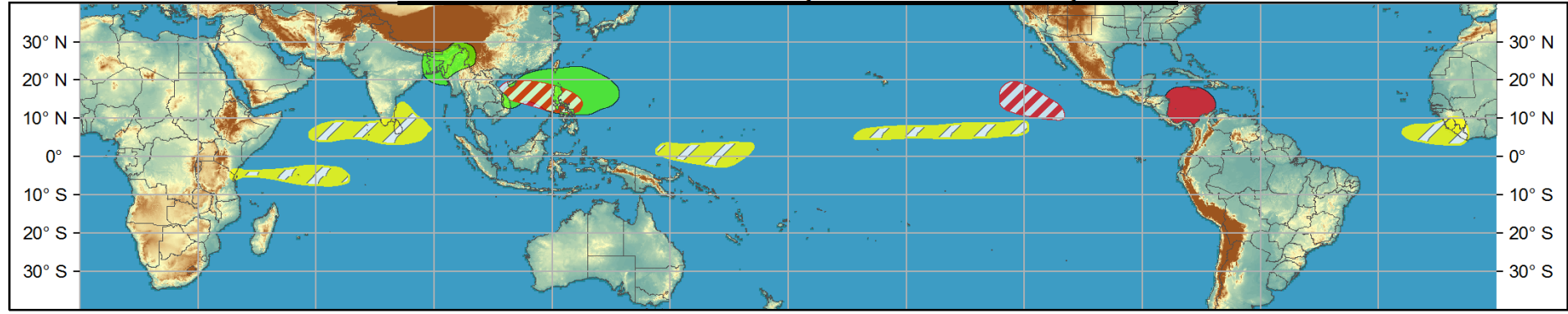


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