

# Global Tropics Hazards And Benefits Outlook

1/5/2021

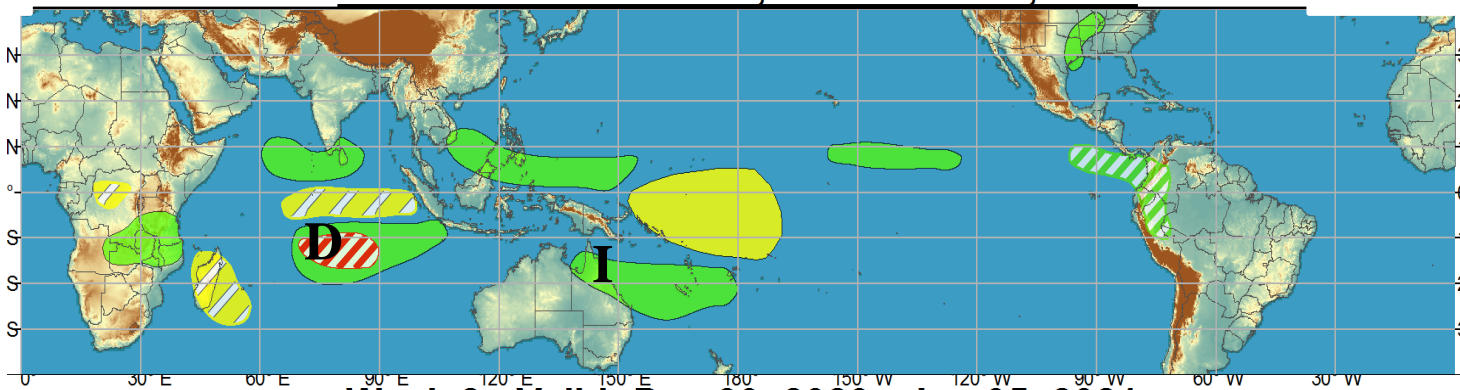
Dan Harnos

## 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

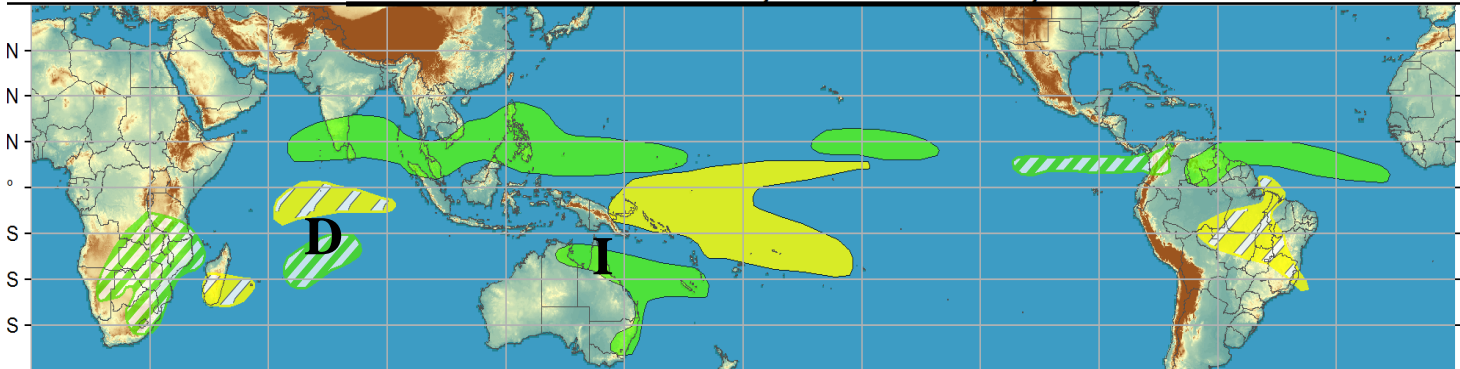
**Week 1 - Valid: Dec 30, 2020 - Jan 05, 2021**



**TC Danilo**  
Jan 1-present  
Peak: 65 knots

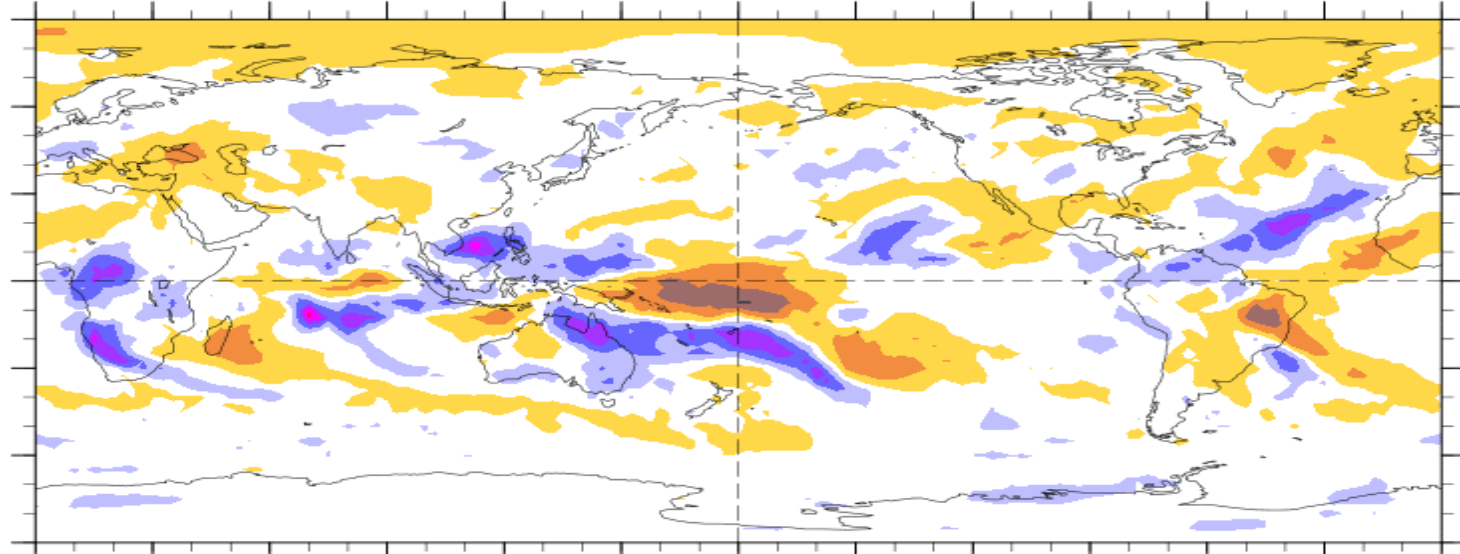
**TS Imogen**  
Jan 3-4  
Peak: 40 knots

**Week 2 - Valid: Dec 30, 2020 - Jan 05, 2021**



7-Day Average OLR Anomaly

2020/12/28 - 2021/01/03



Cool shading  
More clouds/rain

Warm shading  
Less clouds/rain

# Synopsis of Climate Modes

## **ENSO: (December 10, 2020 Update)**

*next update on 14<sup>th</sup> of Jan.*

- ENSO Alert System Status: [La Niña Advisory](#)
- La Niña is likely to continue through the Northern Hemisphere winter 2020-21 (~95% chance during January-March), with a potential transition during the spring 2021 (~50% chance of Neutral during April-June).

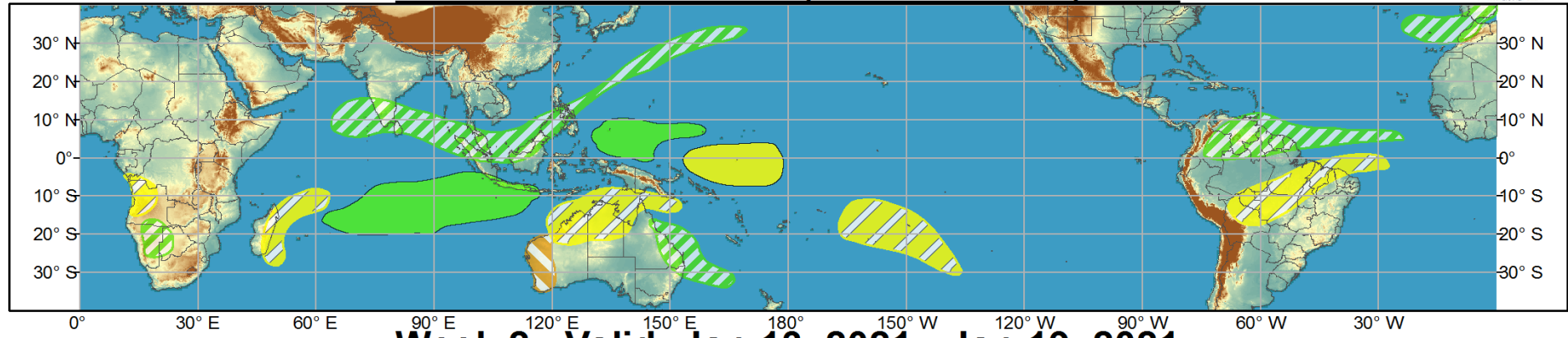
## **MJO and other subseasonal tropical variability:**

- The MJO may be emerging over the Indian Ocean at present.
- There is some uncertainty whether the MJO projection is a true event or a manifestation of multiple atmospheric Kelvin waves.
- Should this event be the MJO and propagate eastward to the Pacific it would support a relatively mild (cool) pattern across the Lower 48 states (Alaska) during mid- to late January. This is one possible aspect of many that could influence the extratropics (La Niña, etc.), and should not taken alone.

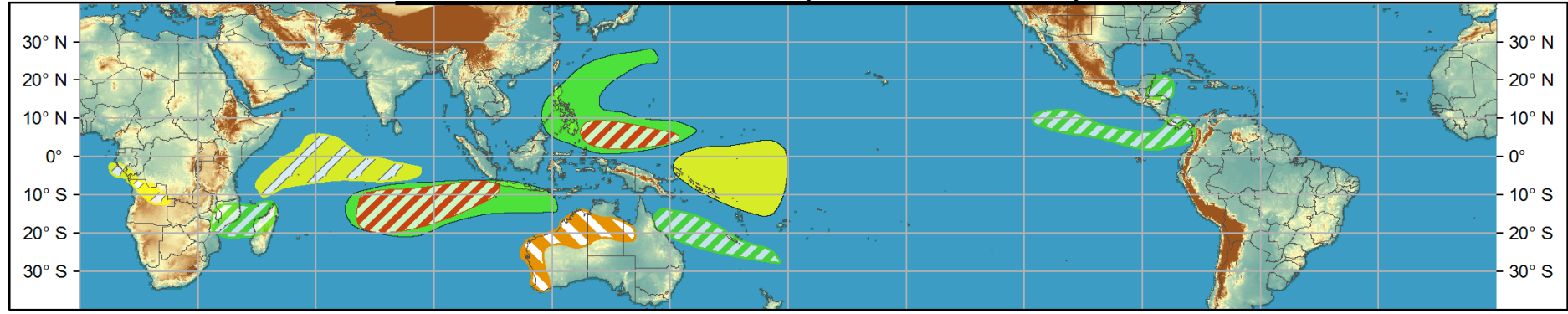


# Global Tropics Hazards and Benefits Outlook - Climate Prediction Center

## Week 1 - Valid: Jan 06, 2021 - Jan 12, 2021



## Week 2 - Valid: Jan 13, 2021 - Jan 19, 2021



Produced: 01/05/2021  
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.
		<b>Below-normal temperatures</b> 7-day mean temperatures in the lower third of the historical range.

Product is updated once per week, except from 6/1 - 11/30 for the region from 120E to 0, 0 to 40N. The product targets broad scale conditions integrated over a 7-day period for US interests only. Consult your local responsible forecast agency.



# IR Satellite & 200-hpa Velocity Potential Anomalies

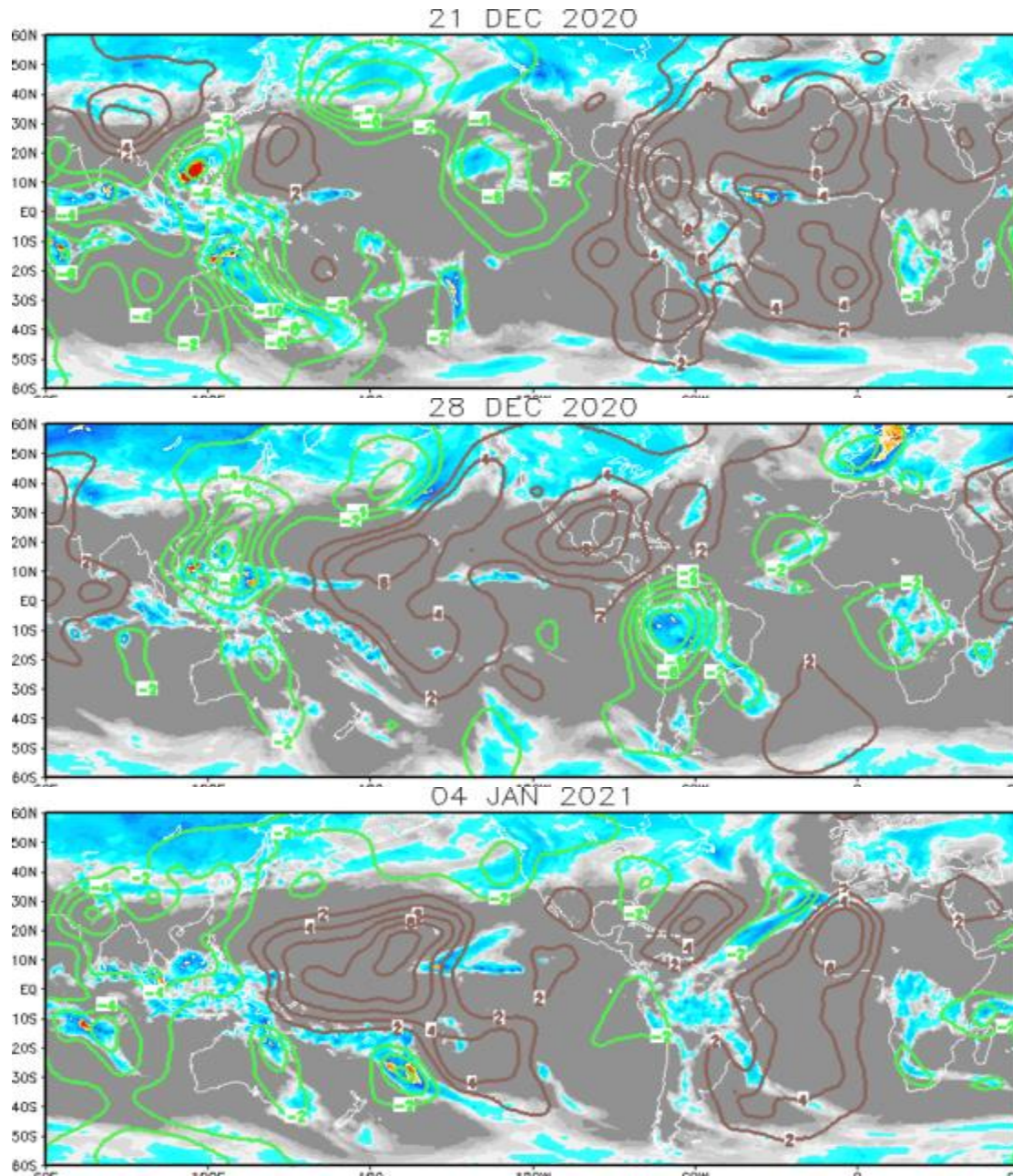
Green: Enhanced Divergence

Brown: Enhanced Convergence

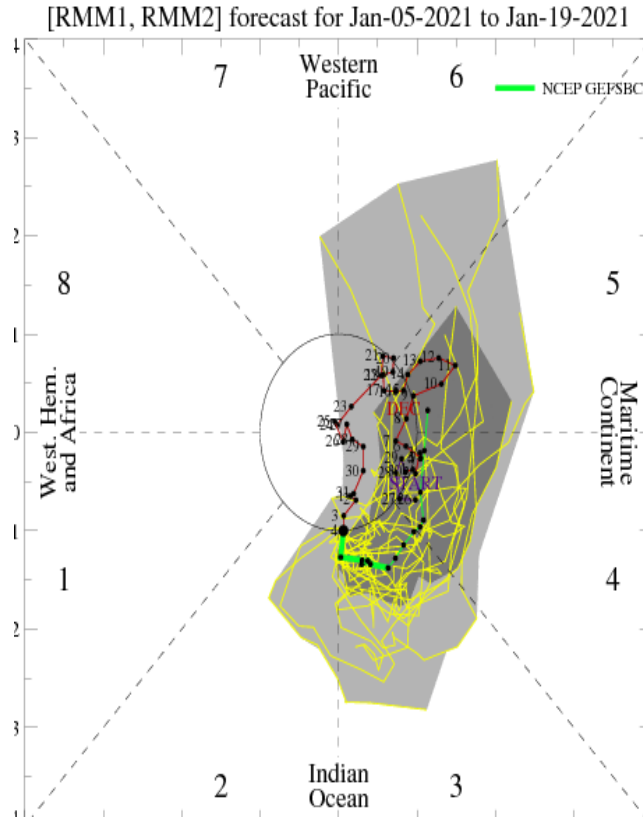
Persistent convection over the Maritime Continent is consistent with La Niña. Kelvin wave activity showing over the East Pacific.

Suppressed convection re-emerges over the western and central Pacific tied to La Niña. Kelvin wave from prior week is now over Africa.

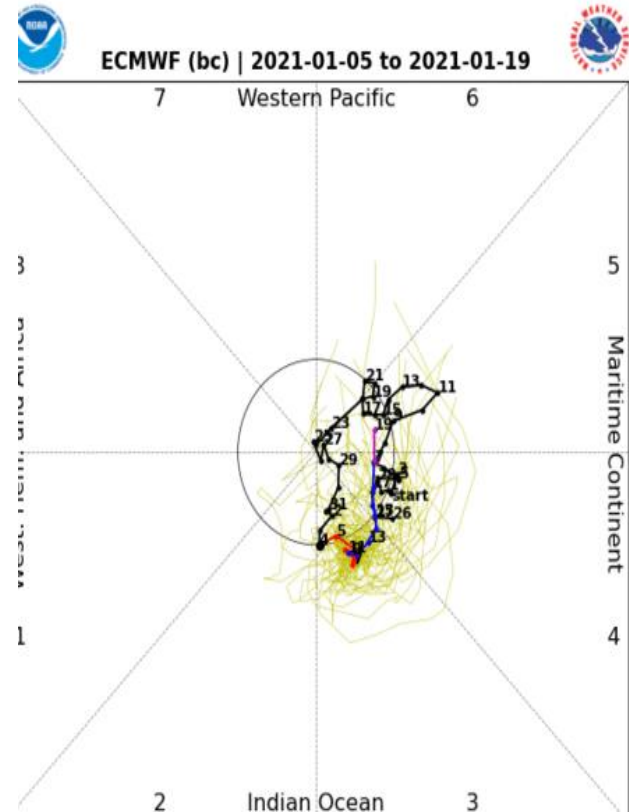
Kelvin wave or MJO activity now over the Indian Ocean?



# MJO Observation/Forecast



GEFS

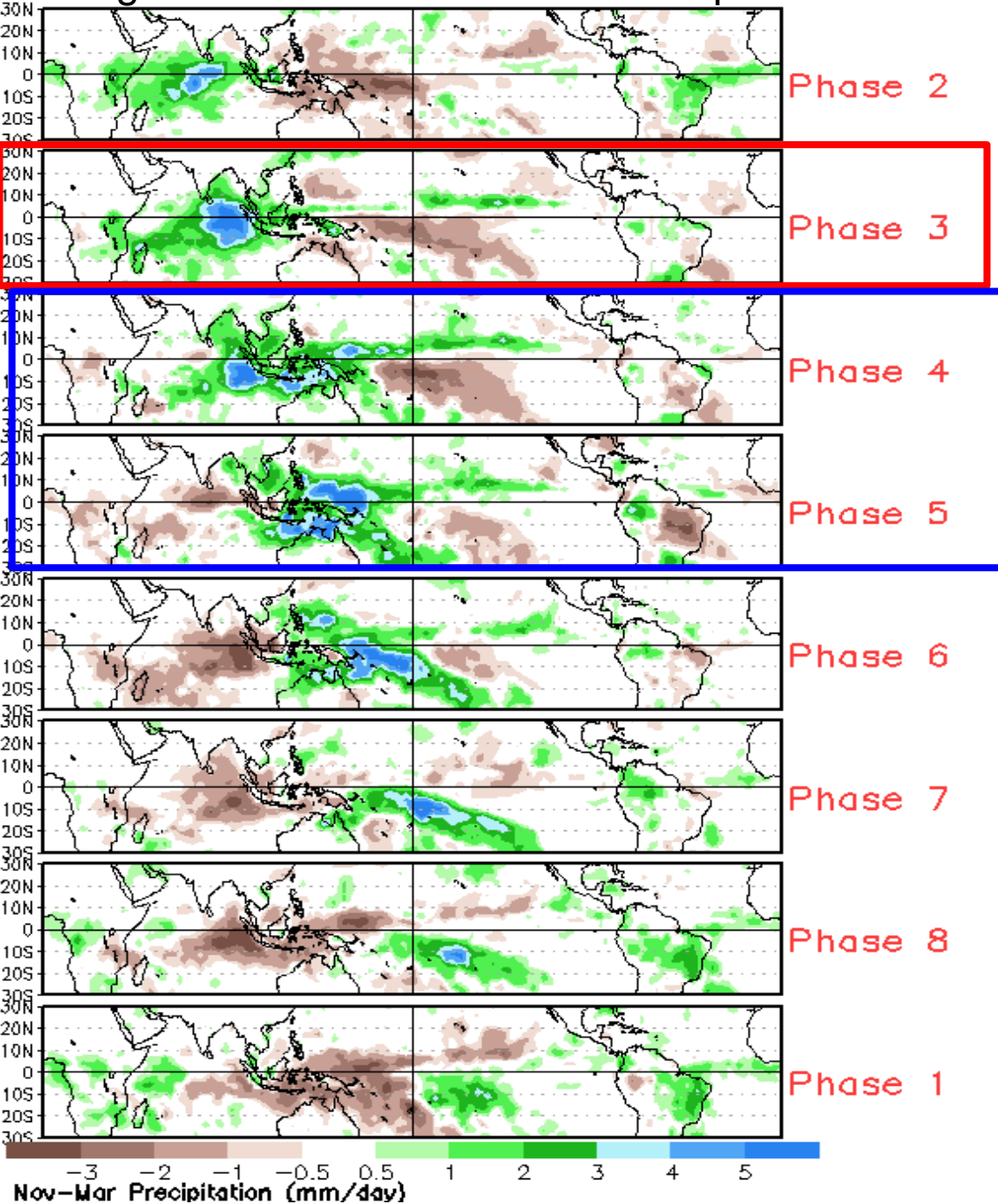


ECMWF

Both the GEFS and ECMWF models show eastward propagation of a MJO event over the next two weeks.

- The GEFS features a more amplified event with a phase speed typical of Kelvin wave activity.
- The ECMWF has a weaker MJO, but a more characteristic propagation.

# Average Conditions when the MJO is present



Week-1: Phase 3

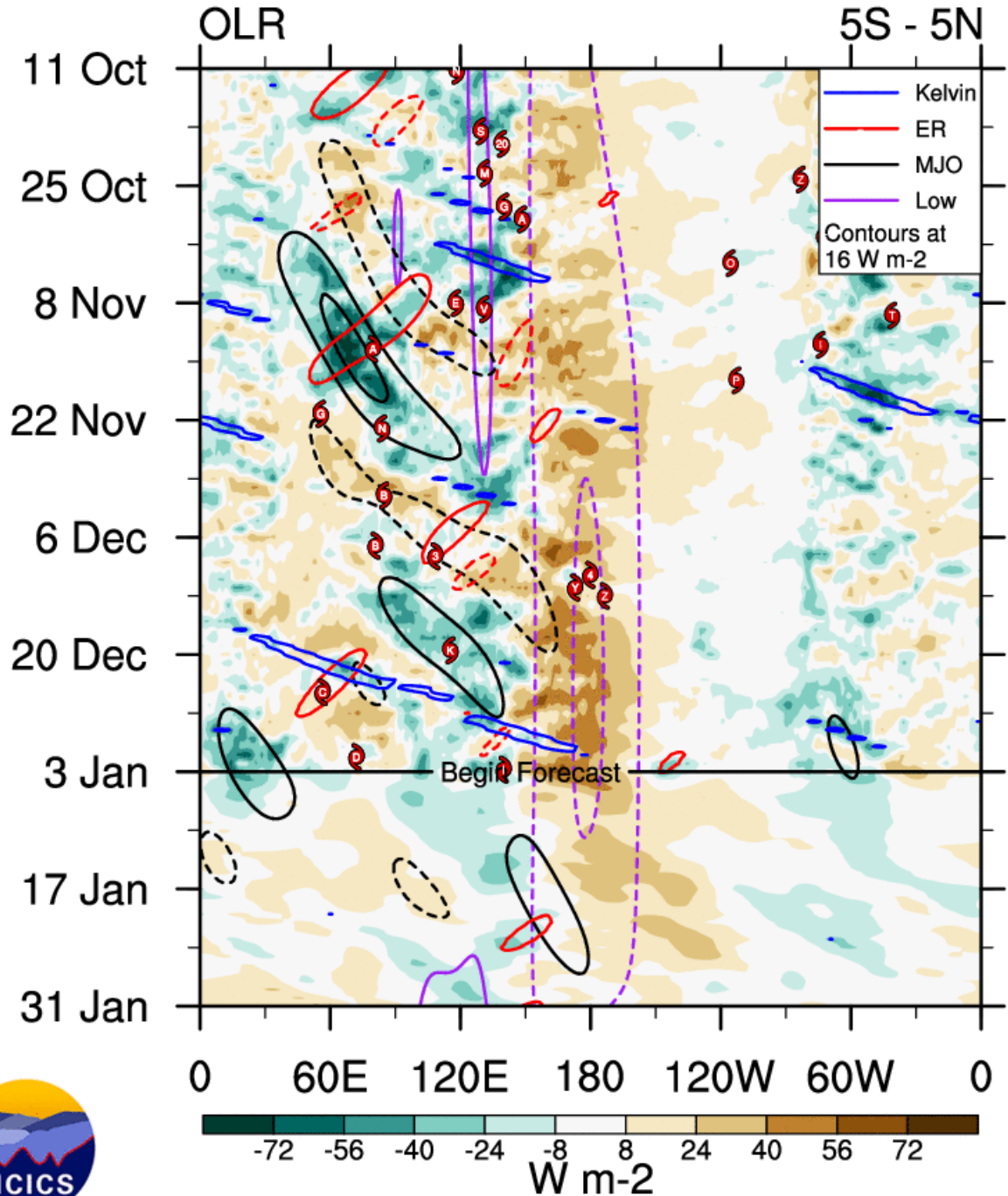
Week-2: Phases 4/5

CAVEAT: These panels are representative of robust MJO events.

The **low frequency** state continues to favor suppressed (enhanced) convection near the Date Line (120°E).

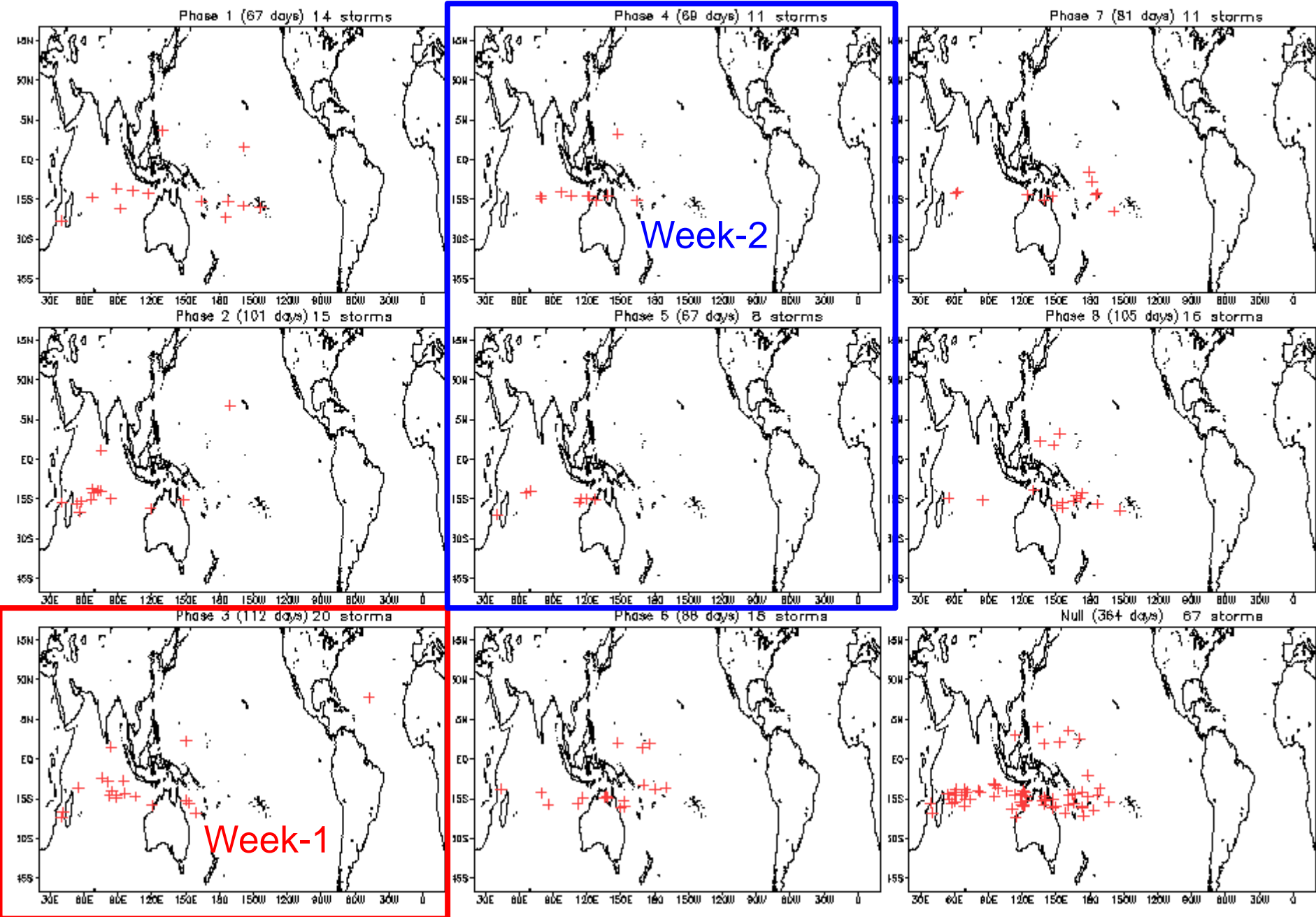
The MJO is objectively analyzed near 30°E and 60°W. The latter is likely an artifact. The former may be tied to one or more **Kelvin waves**, with one of these features briefly highlighted around the 29<sup>th</sup> of December in the filtering.

Model guidance shows the Eastern Hemisphere **Kelvin wave** possibly slowing/growing into a MJO by next week near 140°E.



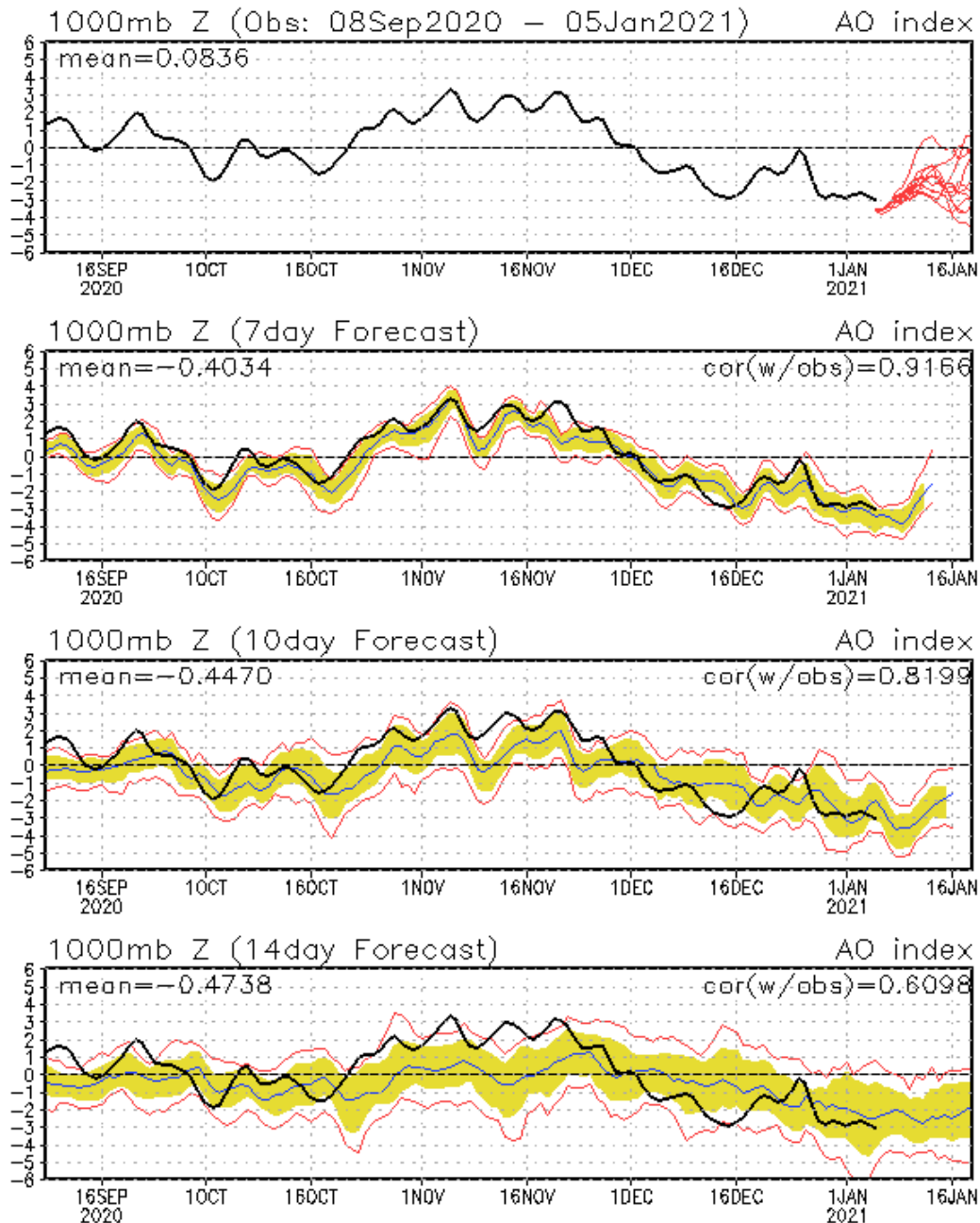


# January Tropical Storm Formation by MJO phase

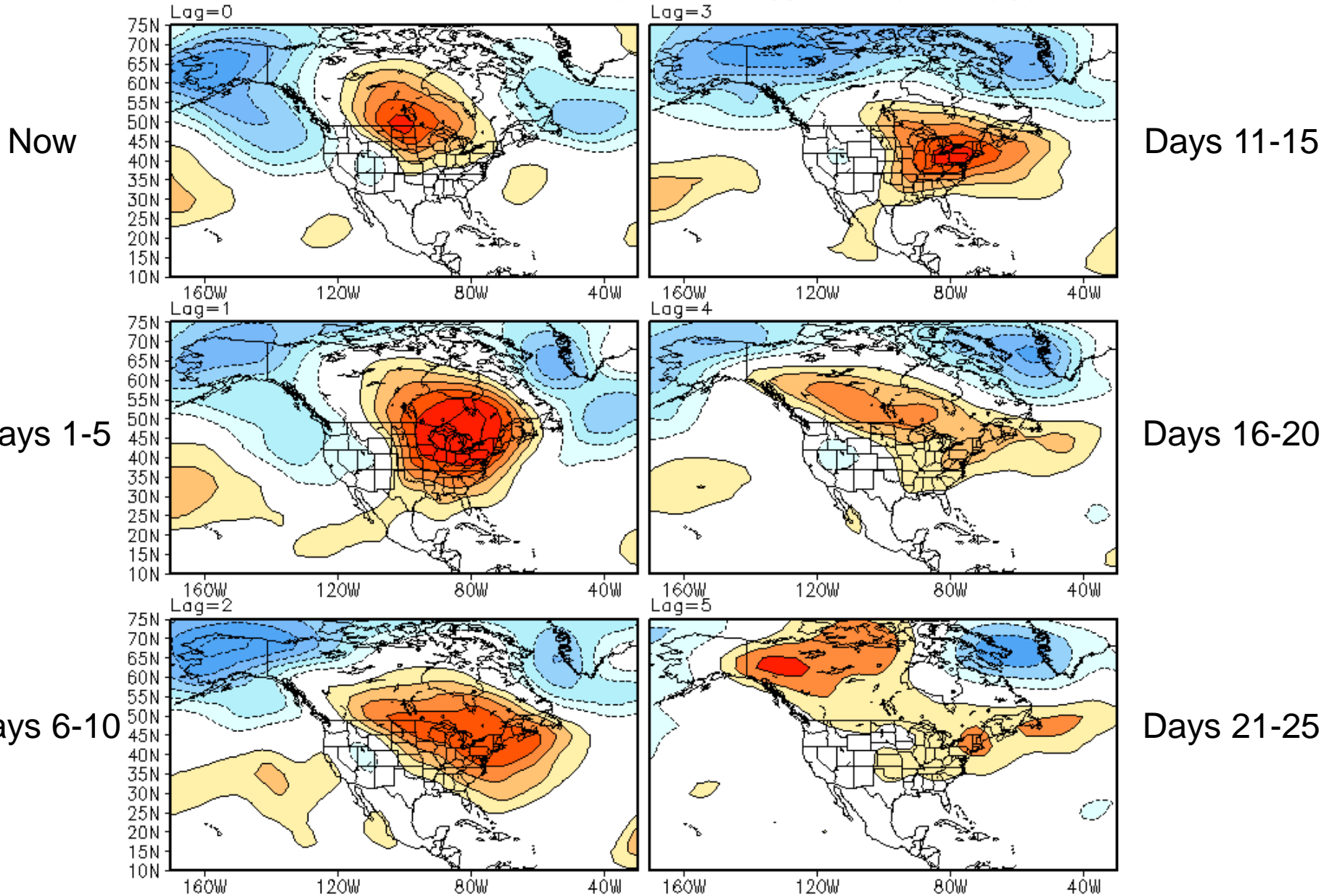


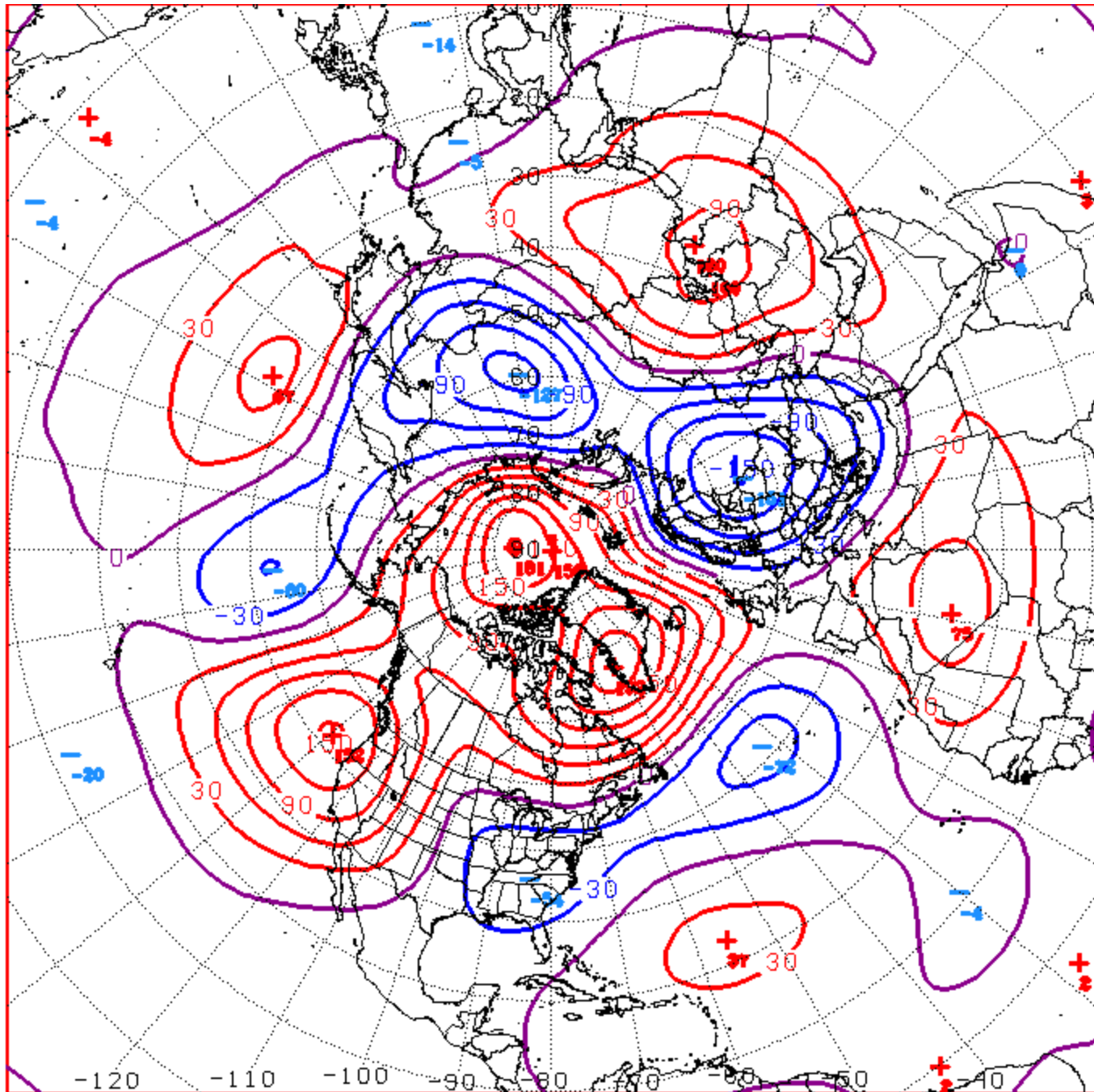
# Connections to U.S. Impacts

## AO: Observed & ENSM forecasts



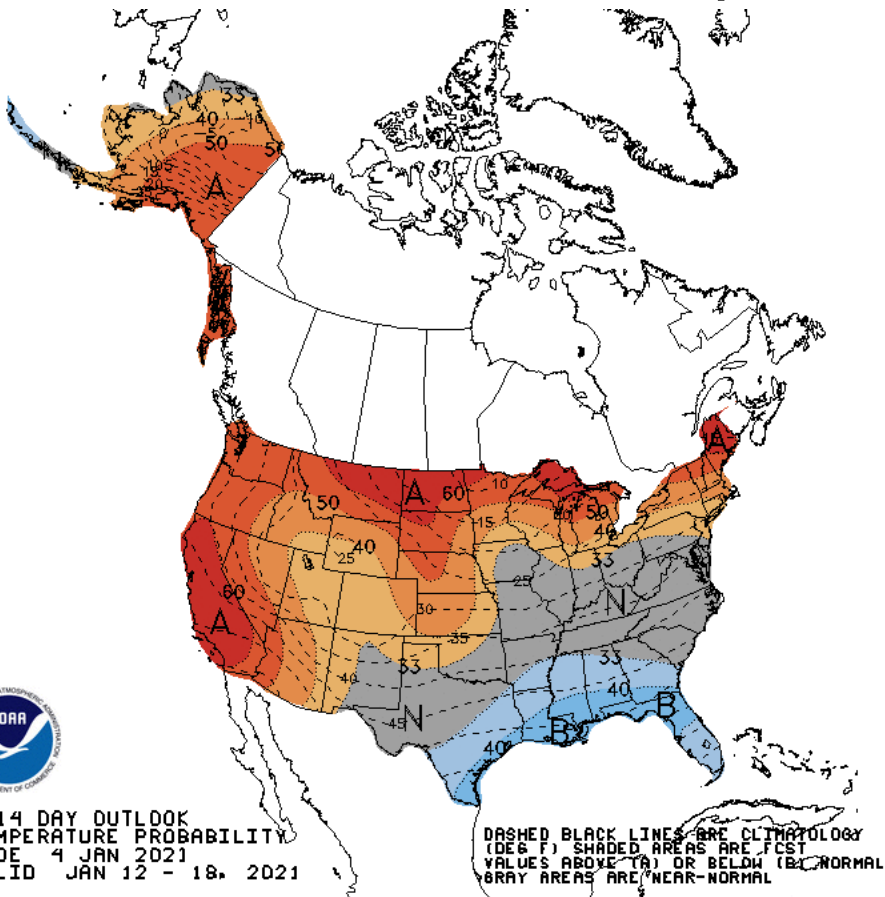
# RMM Phase 3 850-hPa Temperature Lagged Composite (djf)





D+11 500 MB ANOMALIES FROM 00Z ECMM  
 CPC MAP MADE JAN 05 2021 1003 UTC CNTD JAN 16 2021

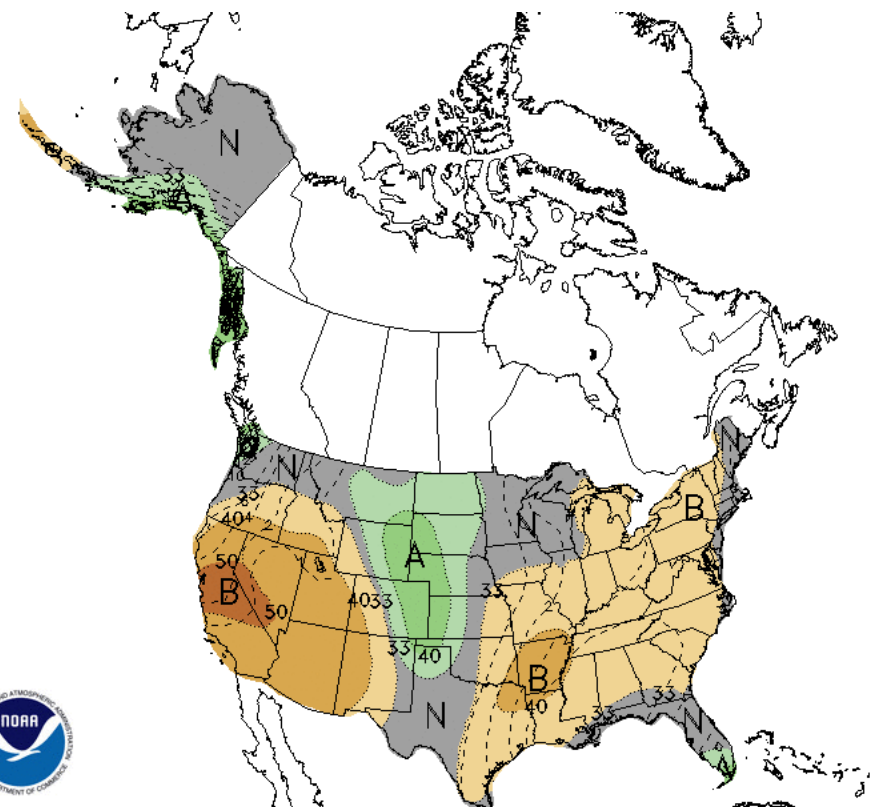
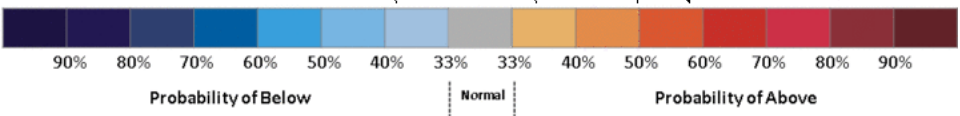
# Week 2 – Temperature and Precipitation



DASHED BLACK LINES ARE CLIMATE  
NORMALS (DEG F). SHADED AREAS ARE FCST  
VALUES ABOVE (A) OR BELOW (B) NORMAL  
GRAY AREAS ARE NEAR-NORMAL



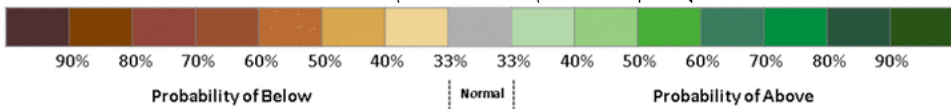
8-14 DAY OUTLOOK  
TEMPERATURE PROBABILITY  
MADE 4 JAN 2021  
VALID JAN 12 - 18, 2021



DASHED BLACK LINES ARE CLIMATE  
NORMALS (TENTHS OF INCHES). SHADED AREAS ARE FCST  
VALUES ABOVE (A) OR BELOW (B) NORMAL  
GRAY AREAS ARE NEAR-NORMAL



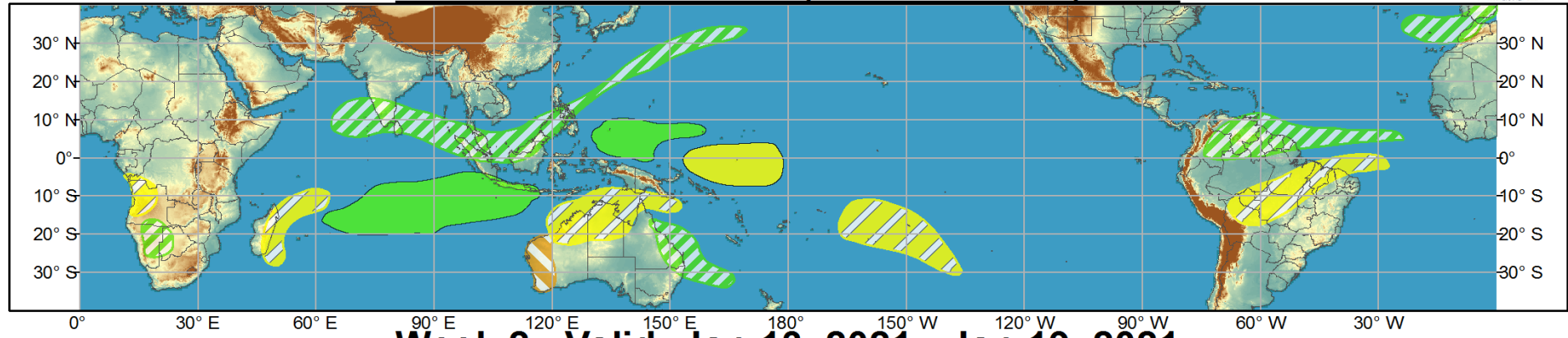
8-14 DAY OUTLOOK  
PRECIPITATION PROBABILITY  
MADE 4 JAN 2021  
VALID JAN 12 - 18, 2021



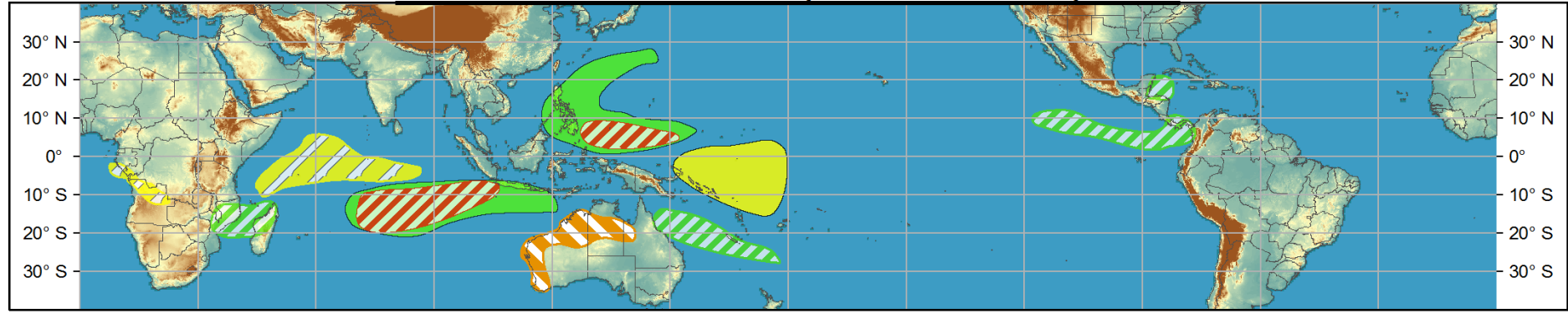


# Global Tropics Hazards and Benefits Outlook - Climate Prediction Center

## Week 1 - Valid: Jan 06, 2021 - Jan 12, 2021



## Week 2 - Valid: Jan 13, 2021 - Jan 19, 2021



Produced: 01/05/2021  
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.
<b>Below-normal temperatures</b>		7-day mean temperatures in the lower third of the historical range.

Product is updated once per week, except from 6/1 - 11/30 for the region from 120E to 0, 0 to 40N. The product targets broad scale conditions integrated over a 7-day period for US interests only. Consult your local responsible forecast agency.

