

# Global Tropics Hazards And Benefits Outlook

12/29/2020

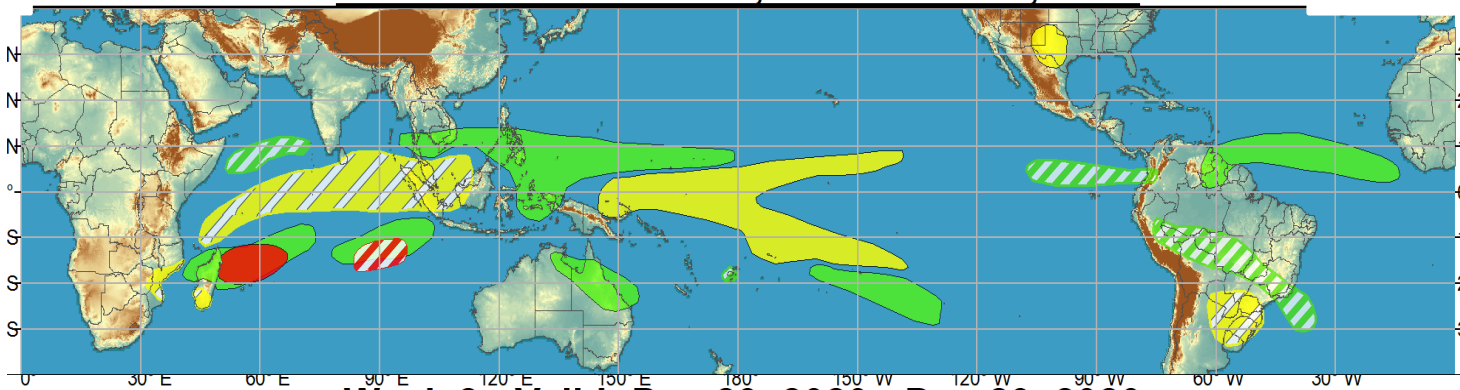
Kyle MacRitchie

## Outline

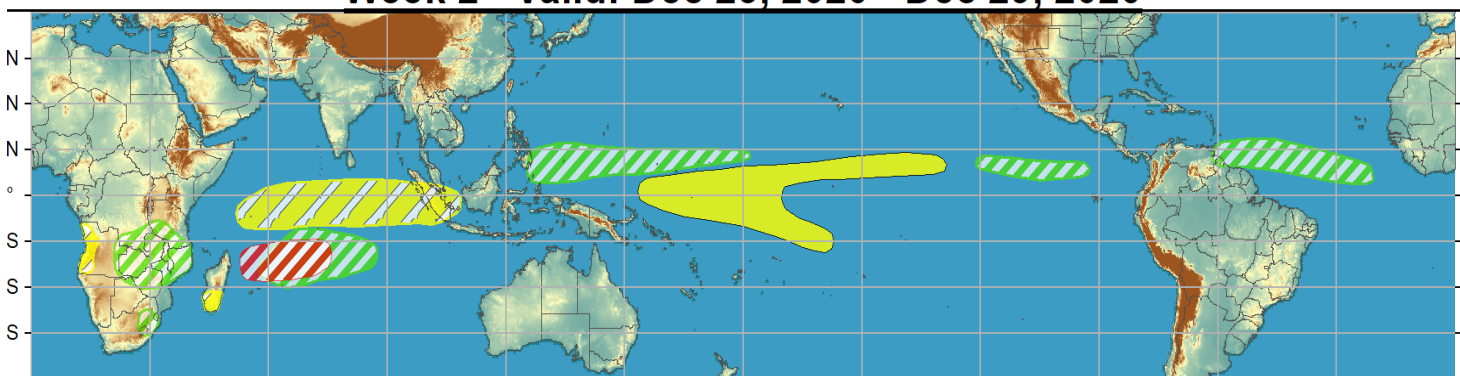
1. Review of Recent Conditions
2. Synopsis of Climate Modes
3. GTH Outlook and Forecast Discussion
4. Connections to U.S. Impacts

# Outlook Review

**Week 1 - Valid: Dec 23, 2020 - Dec 29, 2020**



**Week 2 - Valid: Dec 23, 2020 - Dec 29, 2020**

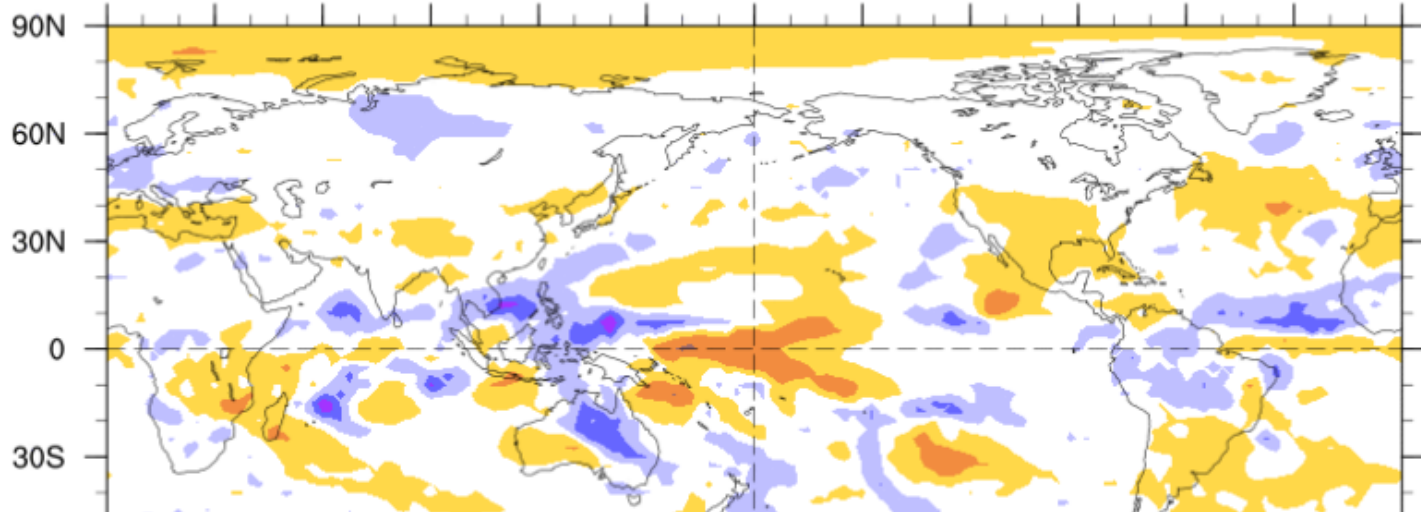


Cool shading  
More clouds/rain

Warm shading  
Less clouds/rain

**7-Day Average OLR Anomaly**

**2020/12/21 - 2020/12/27**



# 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:**

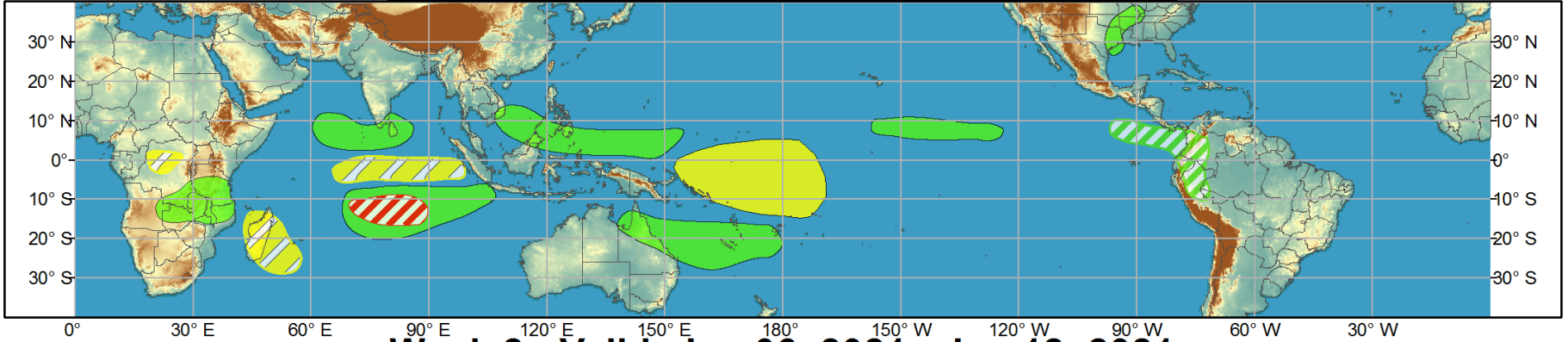
- The MJO is weak but dynamical guidance suggests an event will begin over the Indian Ocean during Week-2.
- Other tropical wave modes are weak, most of the GTH forecast is based on the current La Niña state plus the predicted MJO.



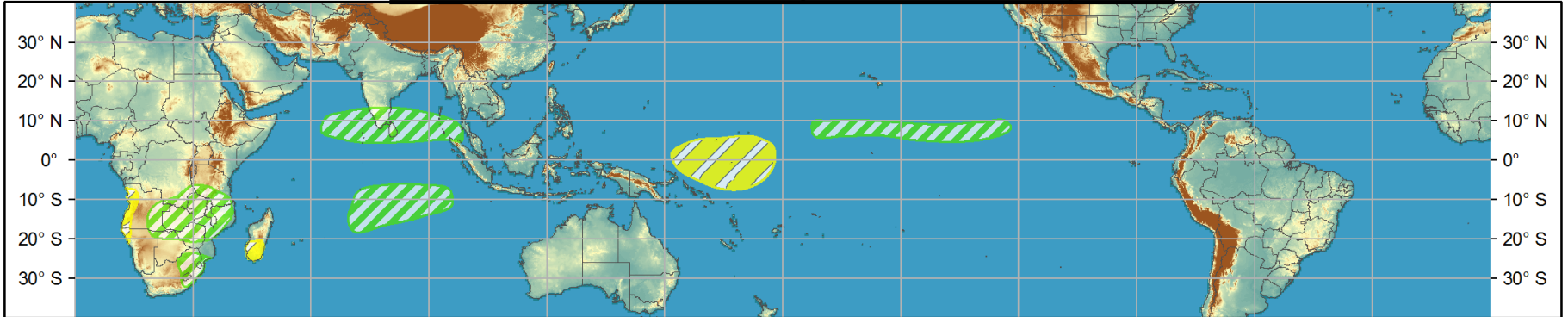
# Global Tropics Hazards and Benefits Outlook - Climate Prediction Center



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



## Week 2 - Valid: Jan 06, 2021 - Jan 12, 2021



**Confidence**  
High Moderate

**Tropical Cyclone Formation**



Development of a tropical cyclone (tropical depression - TD, or greater strength).

**Above-average rainfall**



Weekly total rainfall in the upper third of the historical range.

**Below-average rainfall**



Weekly total rainfall in the lower third of the historical range.

**Above-normal temperatures**



7-day mean temperatures in the upper third of the historical range.

**Below-normal temperatures**



7-day mean temperatures in the lower third of the historical range.

Produced: 12/29/2020

Forecaster: MacRitchie

**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

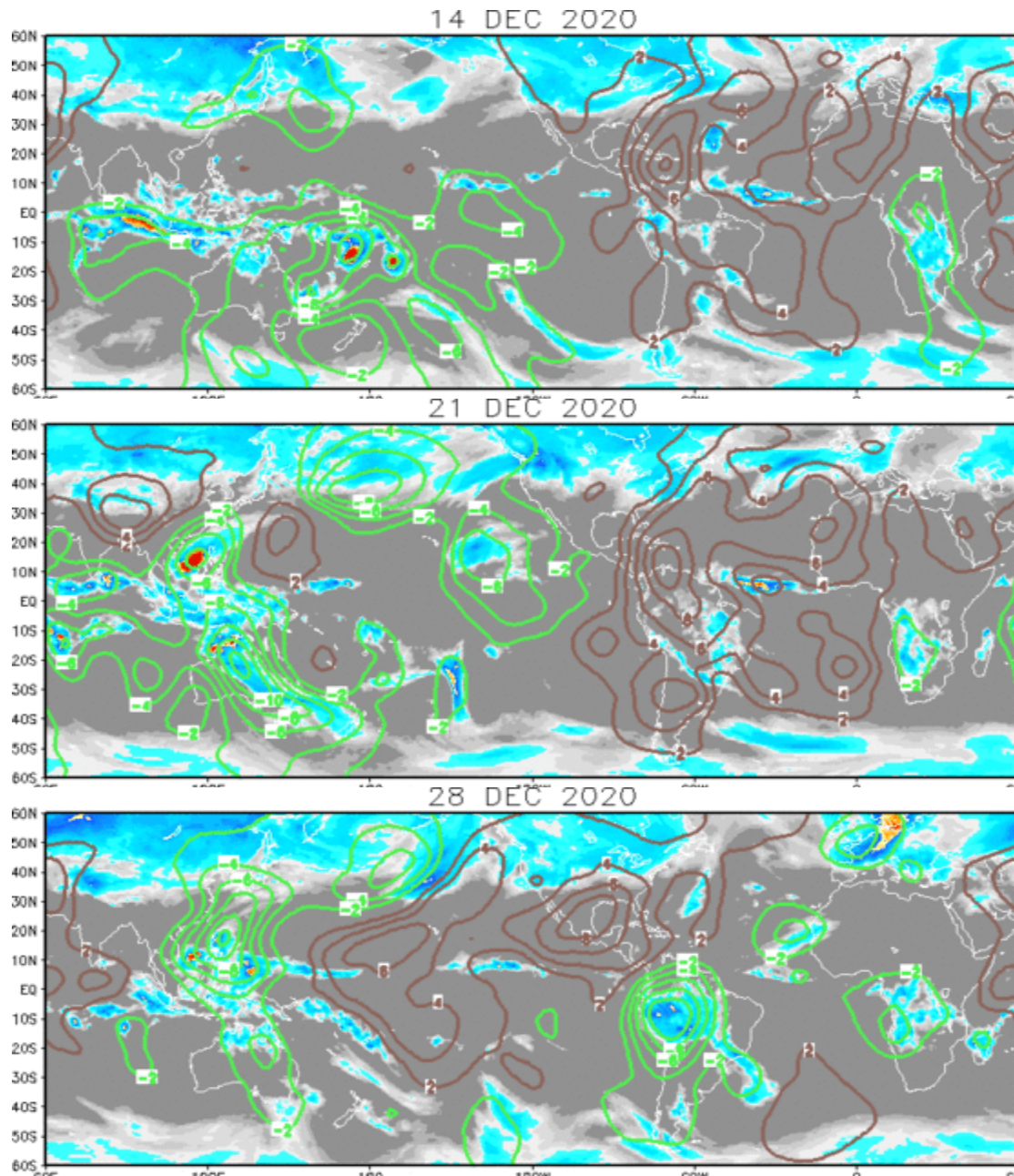
Green: Enhanced Divergence

Brown: Enhanced Convergence

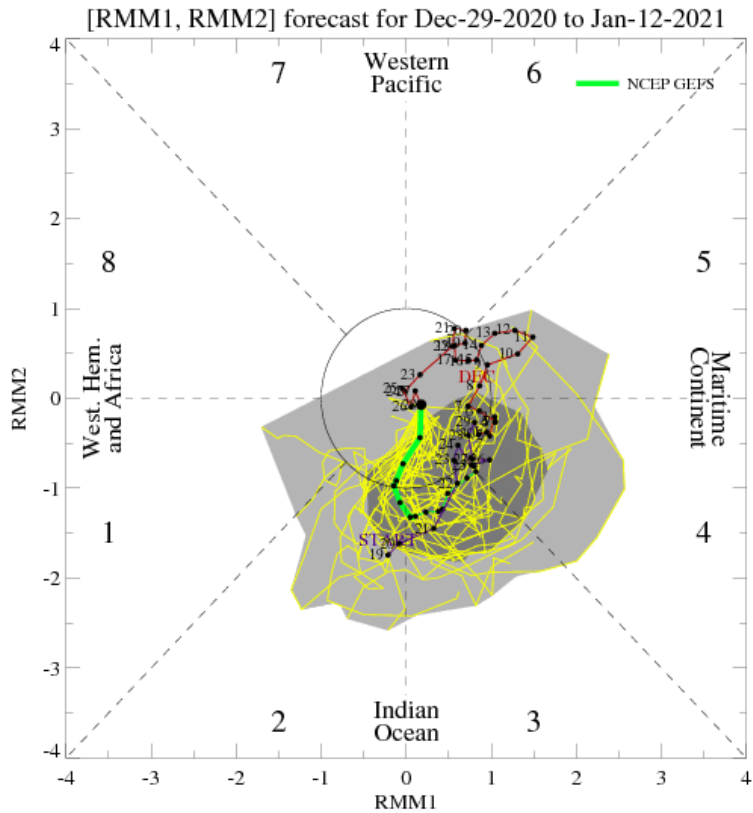
Wave-1 pattern related to weak MJO activity during early-mid December.

Persistent convection over the Maritime Continent is consistent with La Niña.

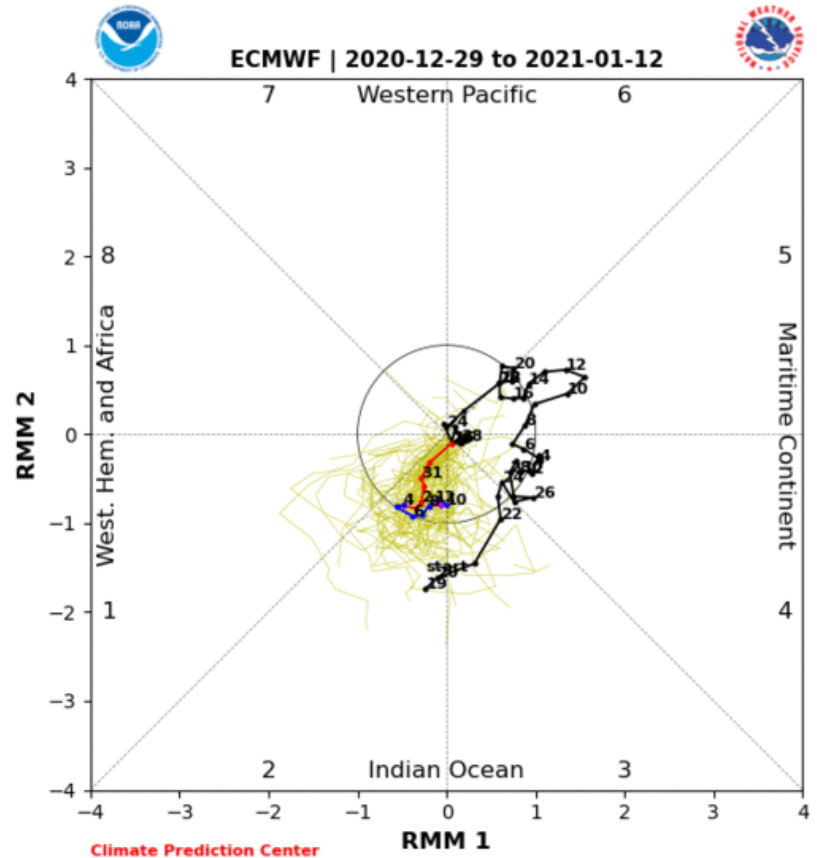
There is no obvious MJO signal now, but this could change during Week-2.



# MJO Observation/Forecast



GEFS

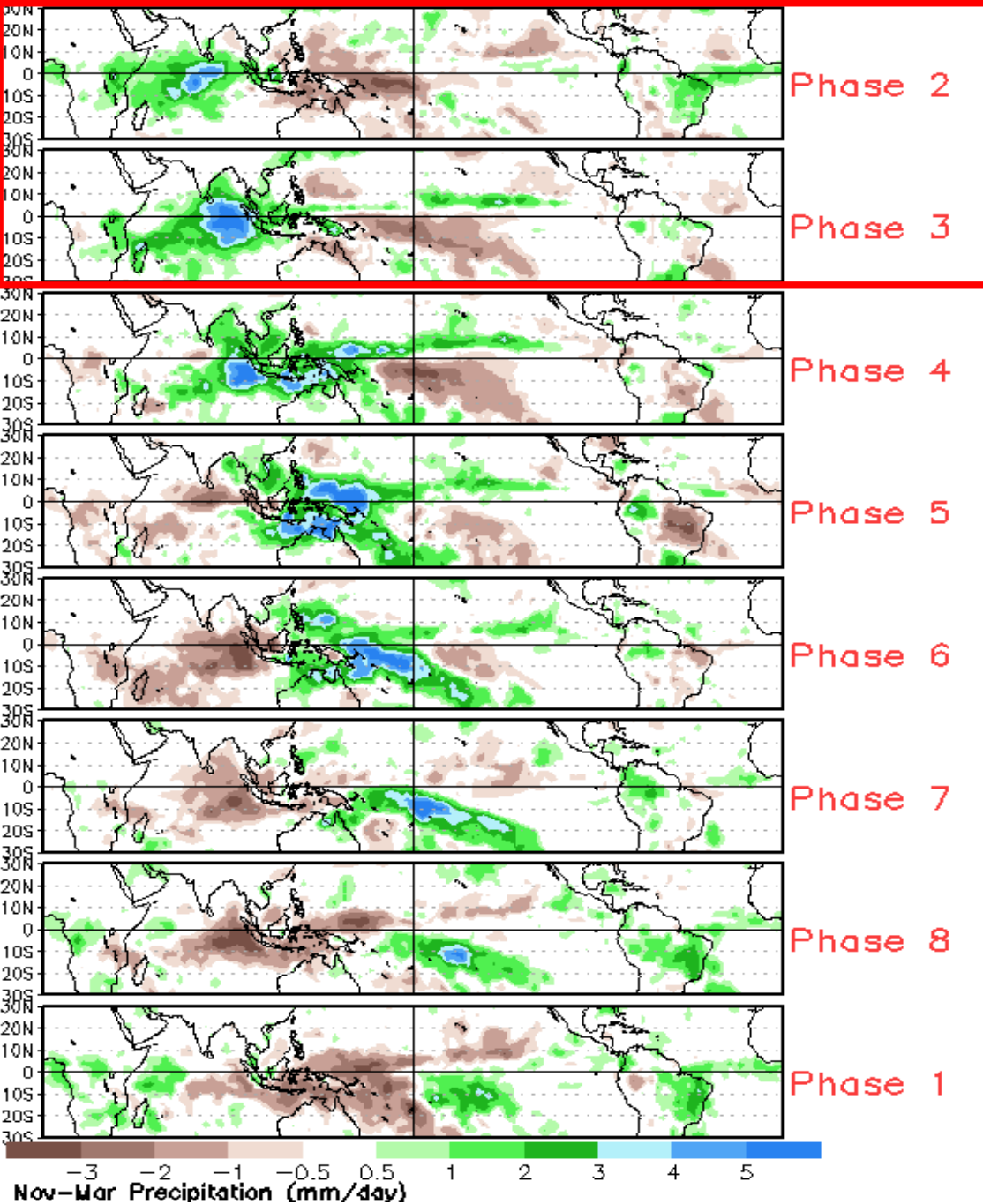


ECMWF

The GEFS ensemble mean and many ECMWF ensemble members predict an MJO over the Indian Ocean during Week-2.

Interestingly, the ECMWF ensemble mean is predicting a weaker MJO signal than it did yesterday.

# Average Conditions when the MJO is present

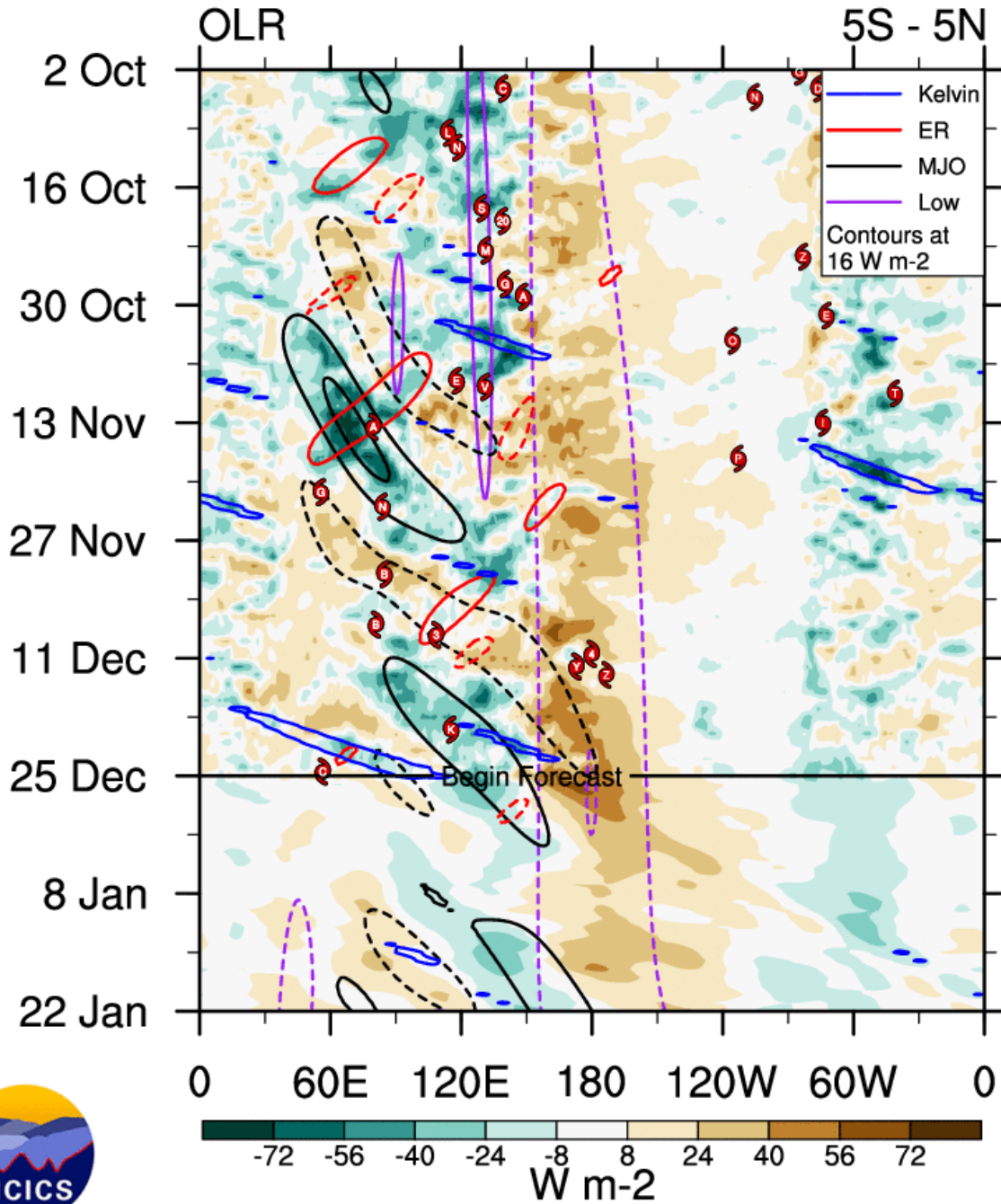


Note the suppressed convection over the Maritime Continent during Phase 2 that could destructively interfere with the ENSO signal.

CAVEAT: These panels are representative of robust MJO events.

Discrete **MJO** activity shows up in the filtering during November and again in mid/late December.

**Low frequency** remains the strongest driver of the pattern.

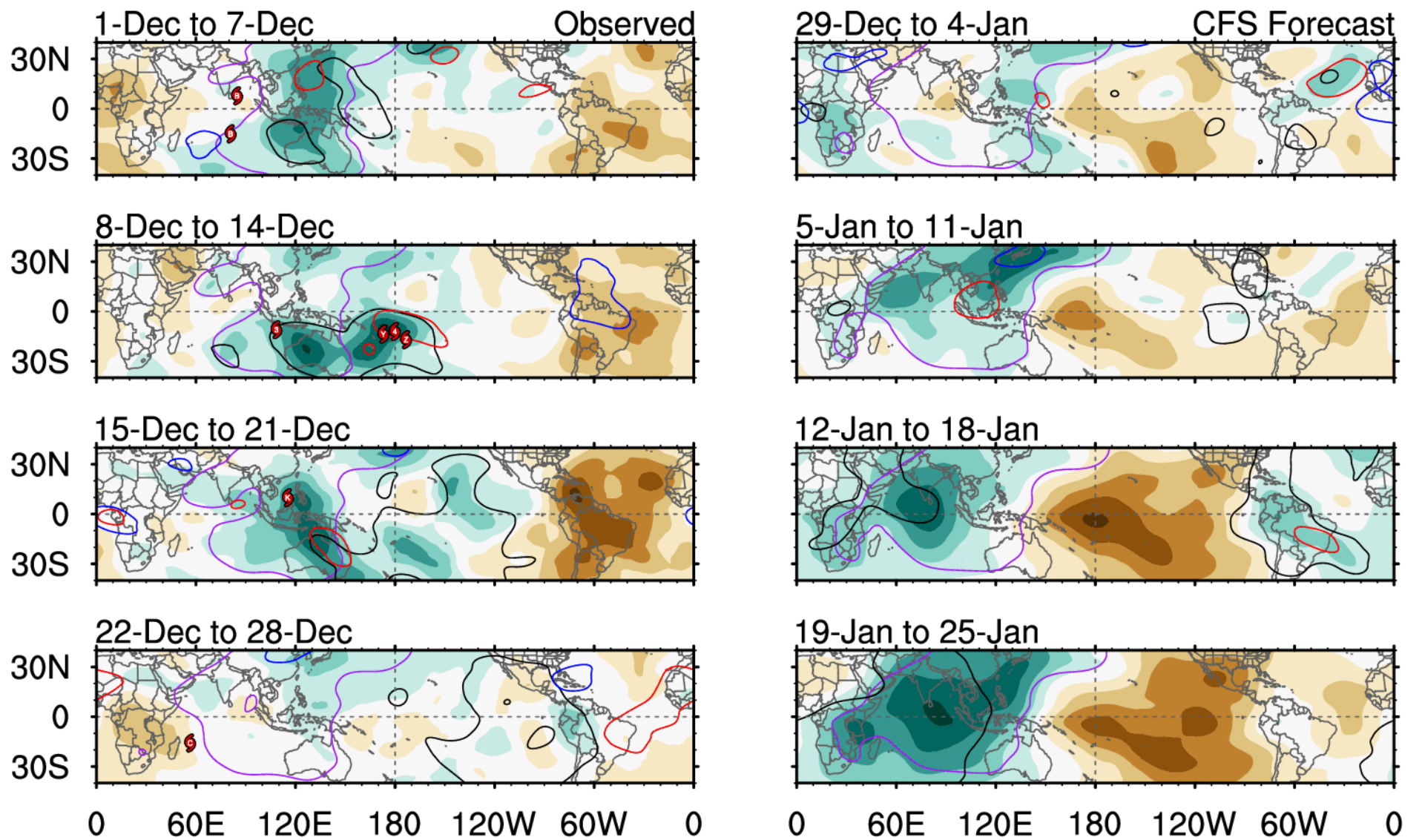


ncics.org/mjo

Sat 2020-12-26 1615 UTC

Carl Schreck  
carl\_schreck@ncsu.edu





# 7-day CHI200 with CFS forecasts



— MJO      — Kelvin x2  
 — Low      — ER

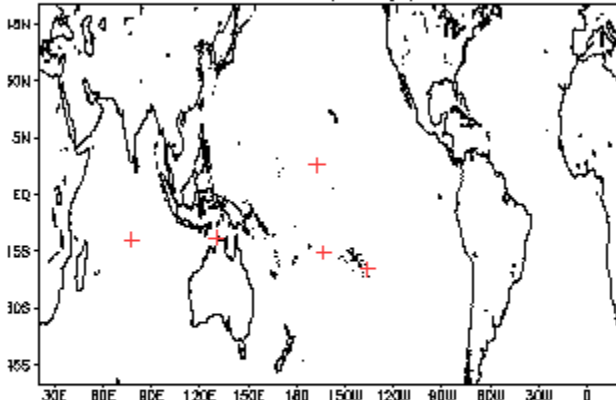
Contours at  $-2, -6 \times 10^6 \text{ m}^2 \text{ s}^{-1}$

Carl Schreck

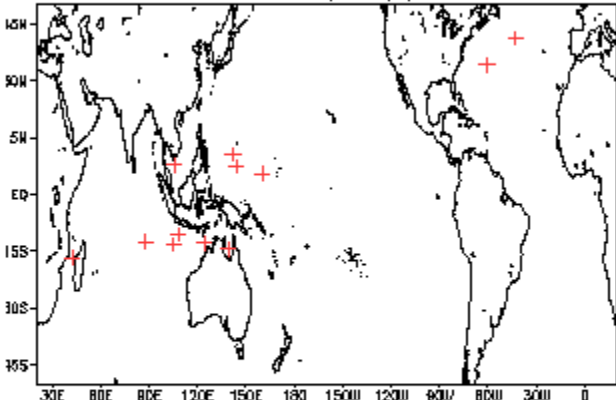
carl\_schreck@ncsu.edu

# December Tropical Storm Formation by MJO phase

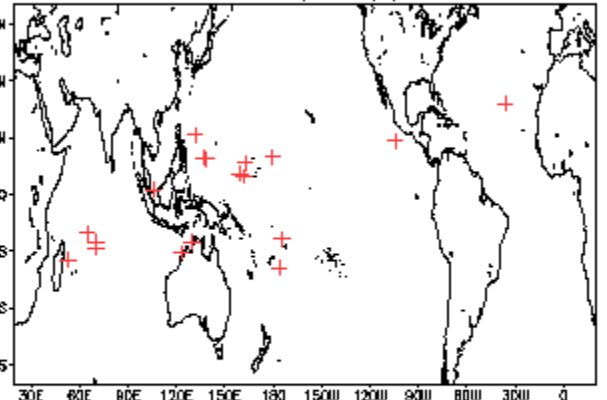
Phase 1 (48 days) 7 storms



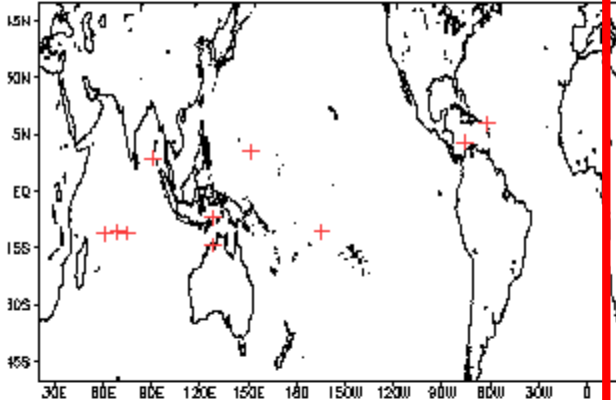
Phase 4 (72 days) 13 storms



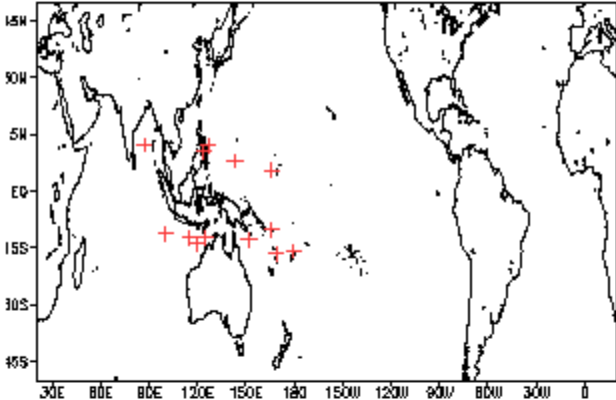
Phase 7 (103 days) 19 storms



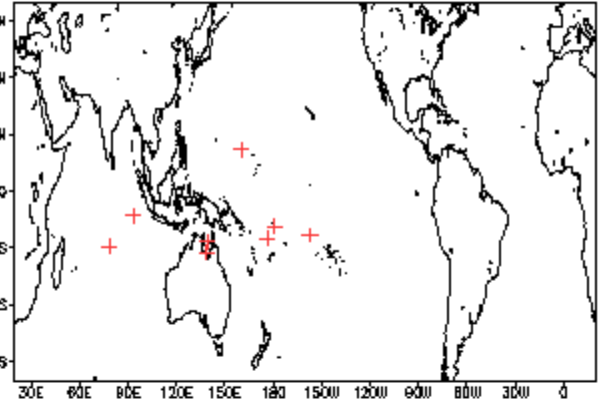
Phase 2 (67 days) 11 storms



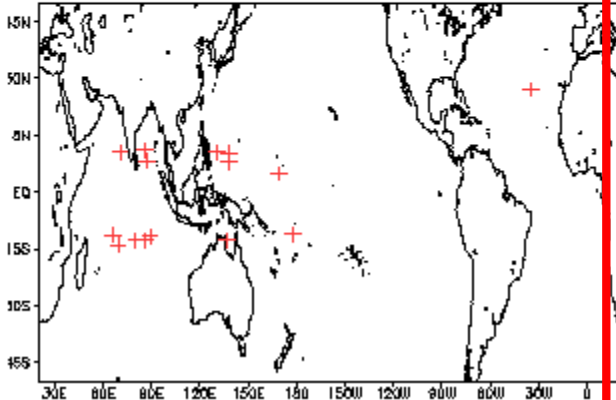
Phase 5 (73 days) 14 storms



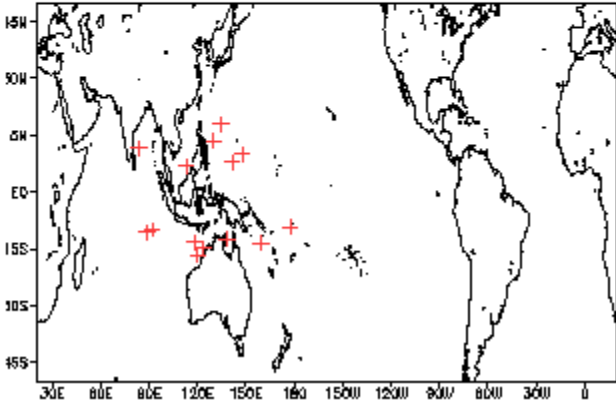
Phase 8 (76 days) 9 storms



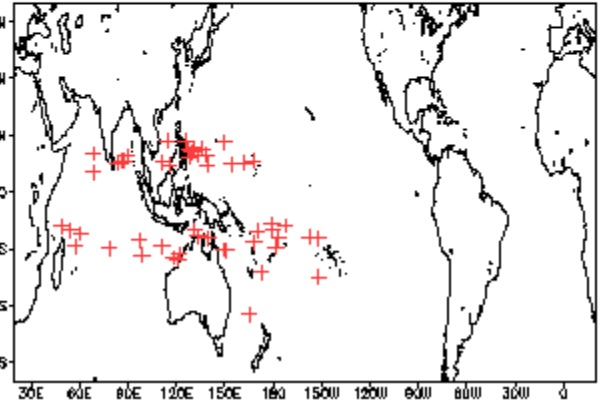
Phase 3 (101 days) 16 storms



Phase 6 (69 days) 15 storms

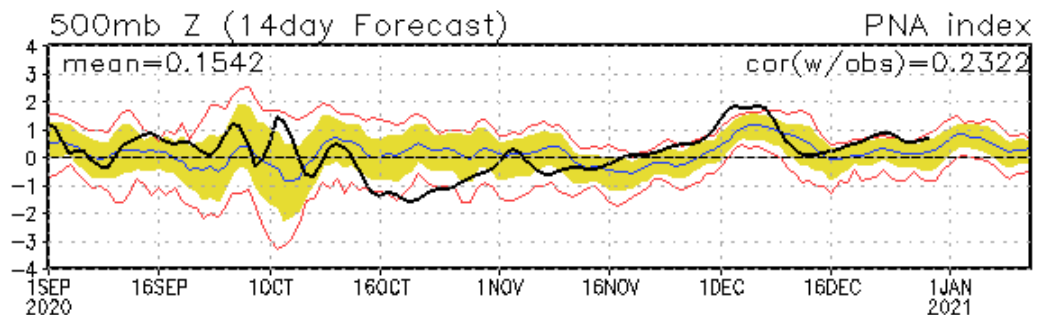
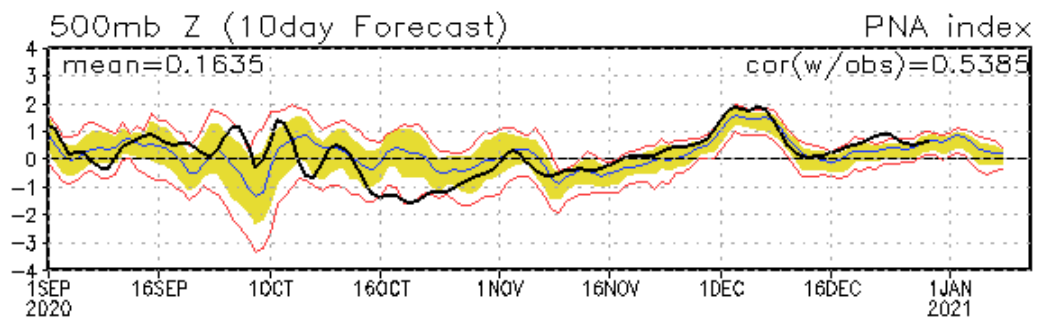
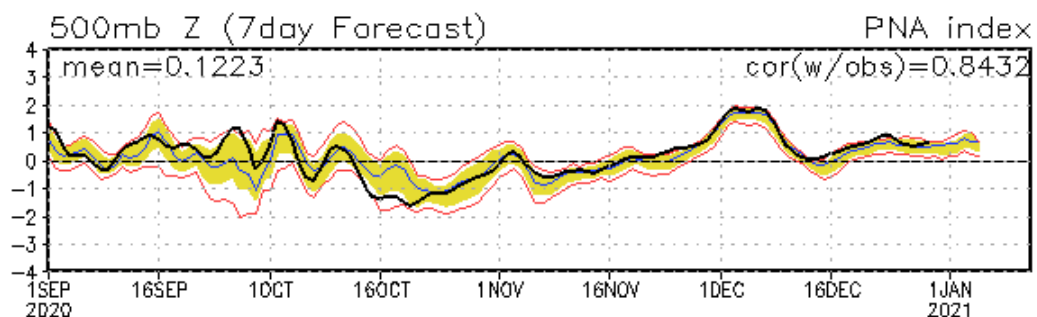
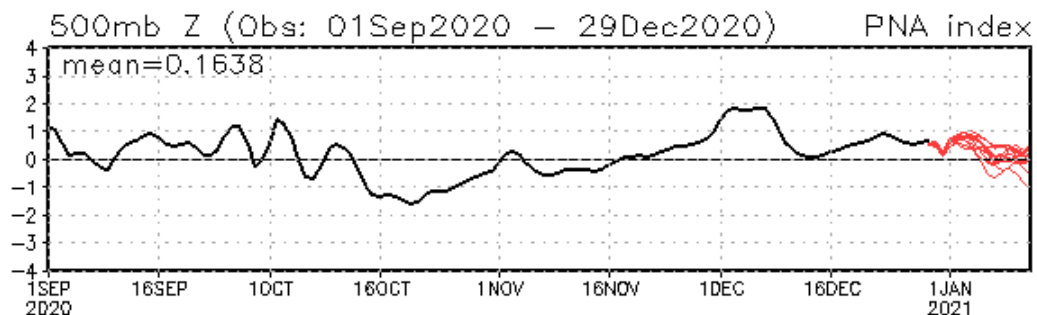


Null (416 days) 52 storms

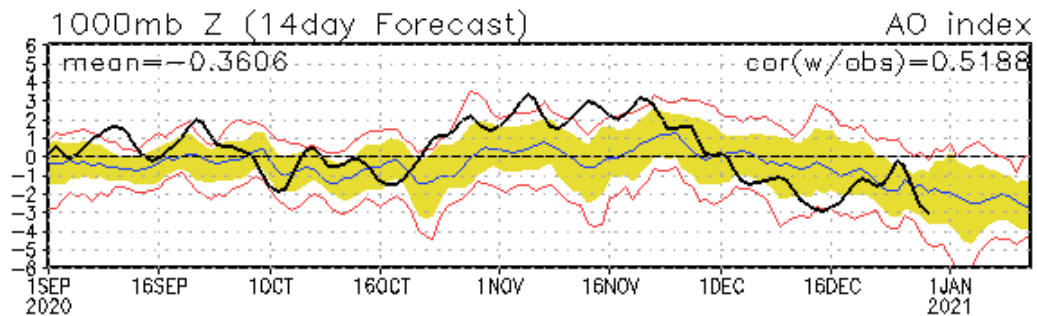
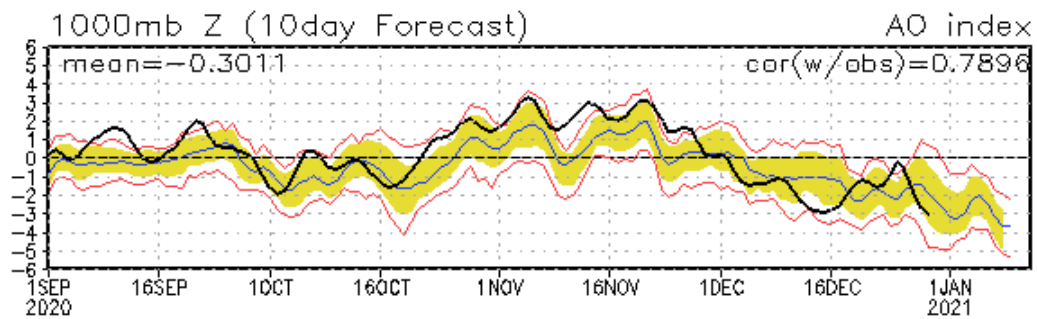
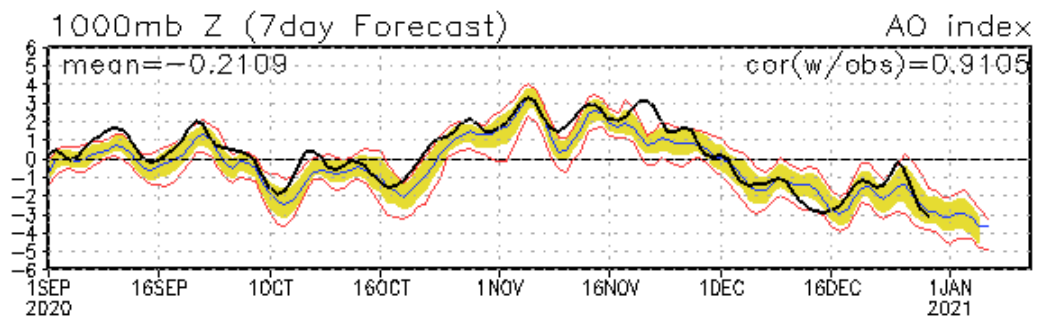
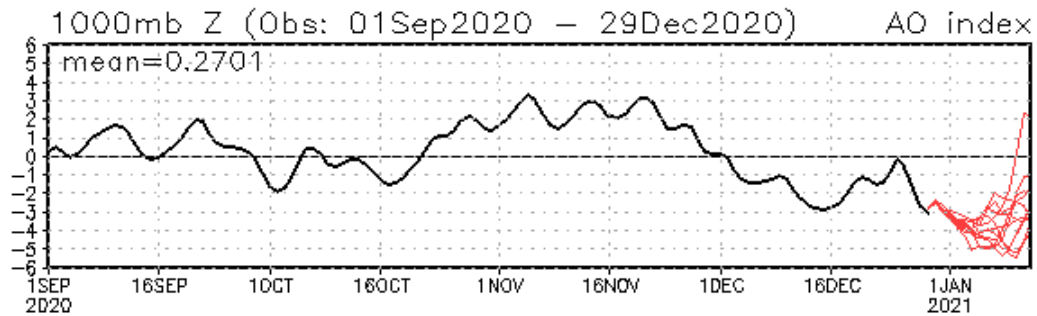


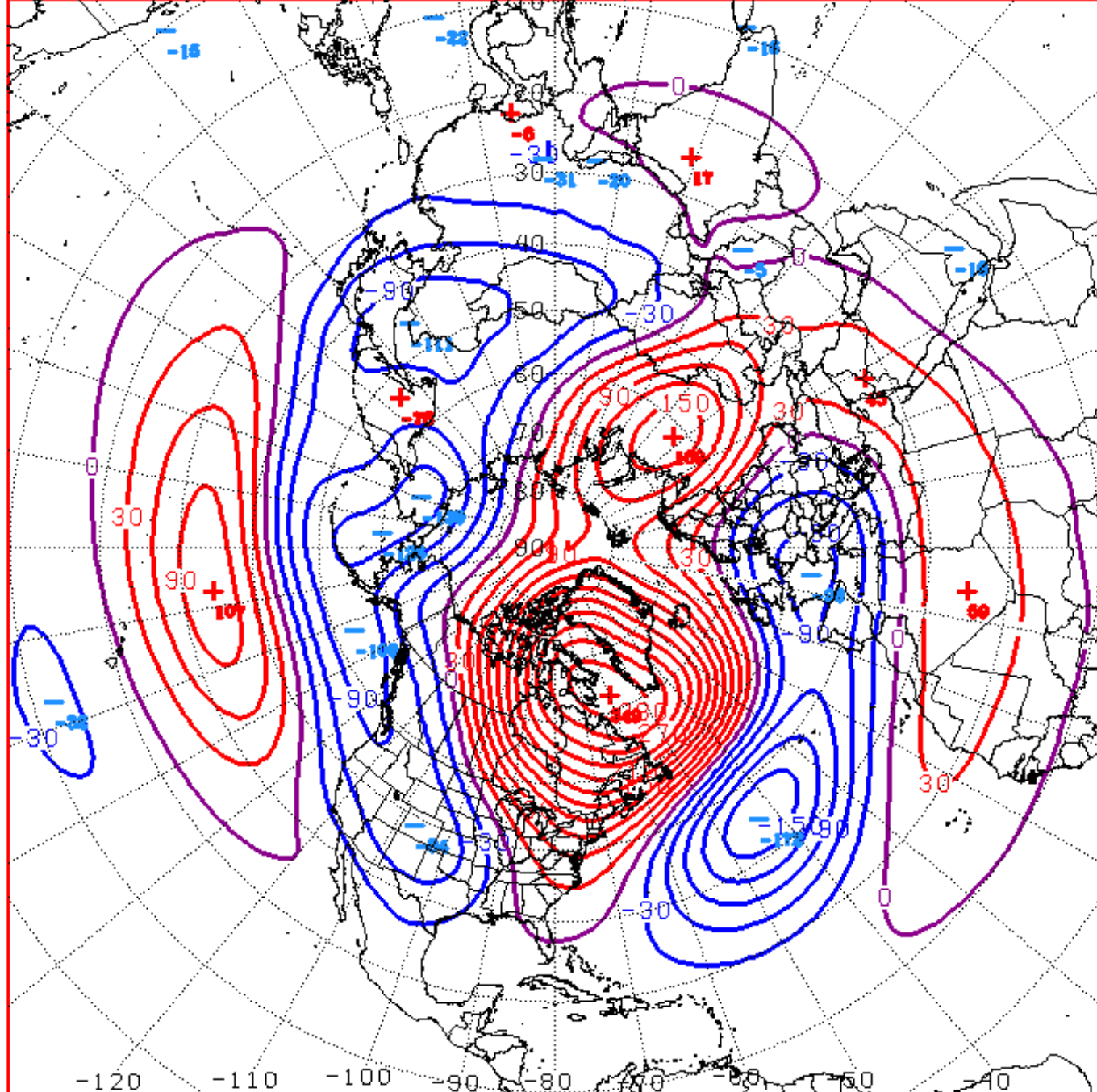
# Connections to U.S. Impacts

## PNA: Observed & ENSM forecasts



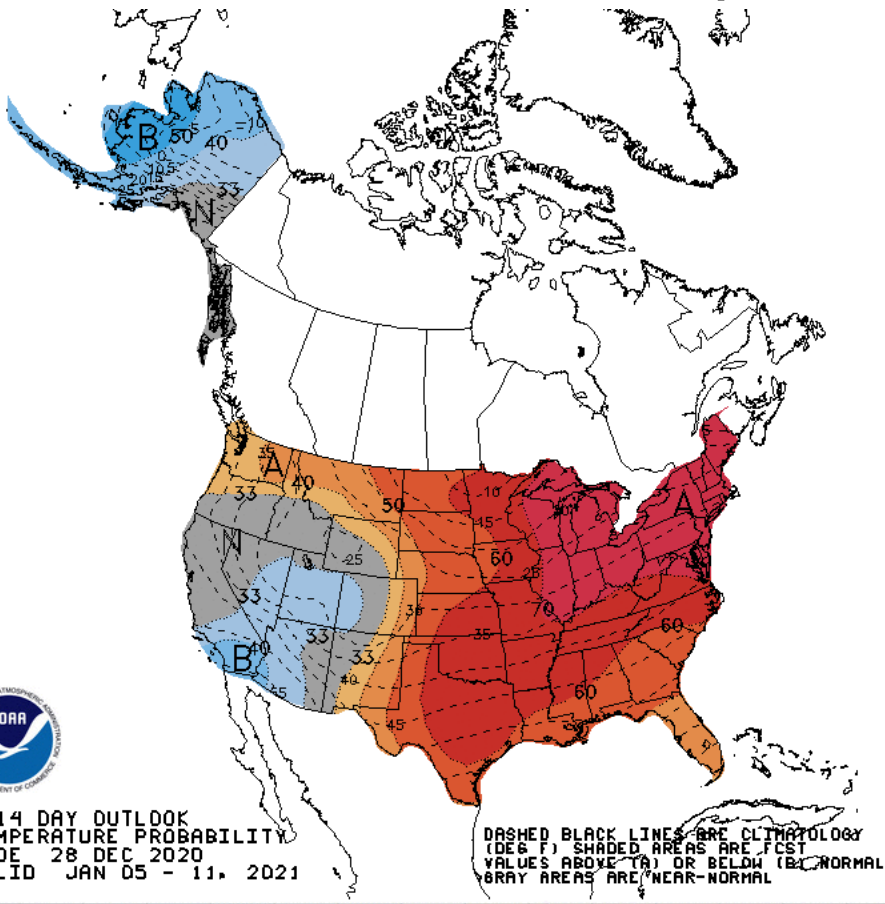
## AO: Observed & ENSM forecasts





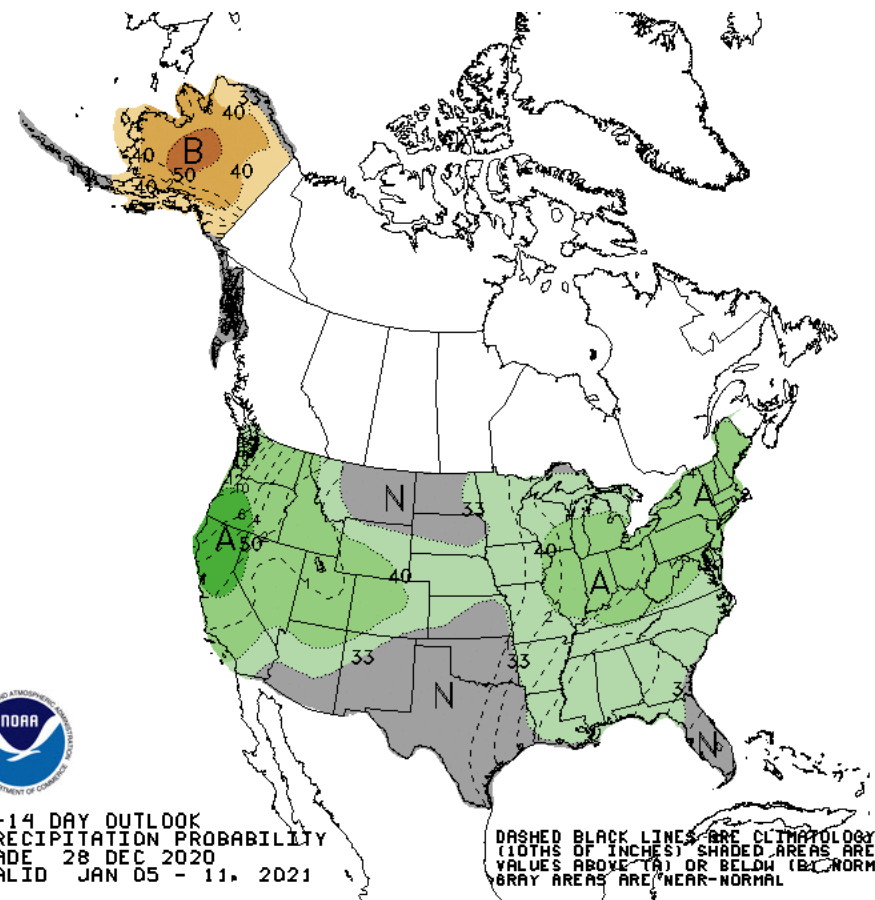
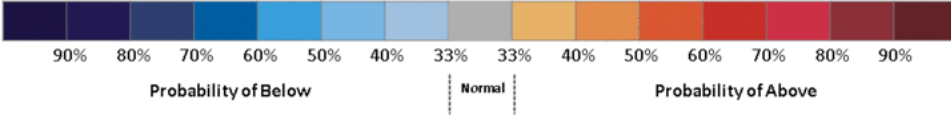
D+11 500 MB ANOMALIES FROM ALZ ENSM  
CPC MAP MADE DEC 29 2020 1423 UTC CNTD JAN 09 2021

# Week 2 – Temperature and Precipitation



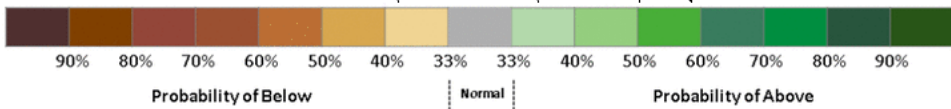
8-14 DAY OUTLOOK  
TEMPERATURE PROBABILITY  
MADE 28 DEC 2020  
VALID JAN 05 - 11, 2021

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



8-14 DAY OUTLOOK  
PRECIPITATION PROBABILITY  
MADE 28 DEC 2020  
VALID JAN 05 - 11, 2021

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

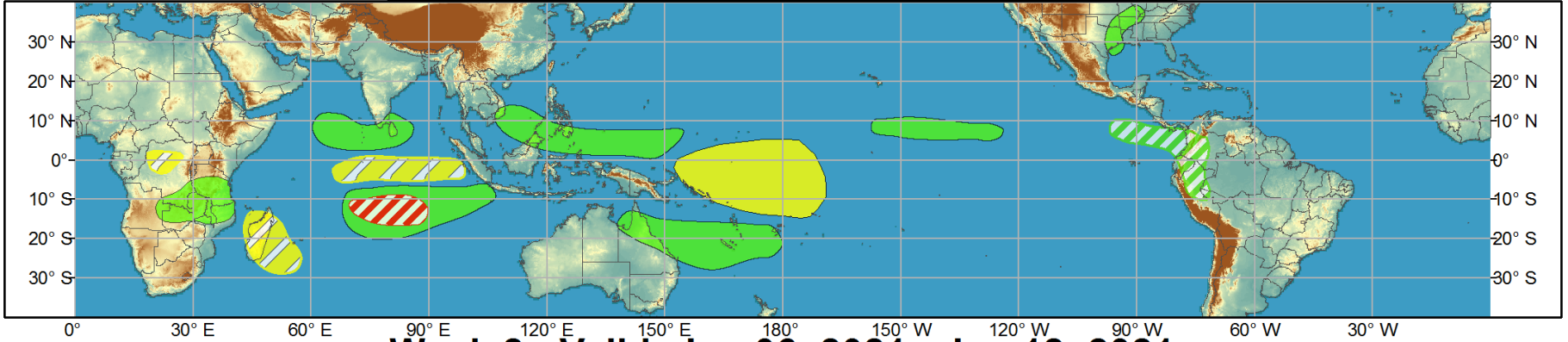




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- Above-average rainfall**
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- Development of a tropical cyclone (tropical depression - TD, or greater strength).
- Weekly total rainfall in the upper third of the historical range.
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